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no.2

# The Canadian Medical Quarterly

monthly

Vol. IV



Nov. 1918

No. 2

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NOVEMBER 1918



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Yours very truly,  
M. B.

The foregoing letter speaks for itself. It is one of the many messages which have reached us. The volume contains papers of vital interest to all practitioners—over 60 contributions, 326 pages. Among the list are the following:

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Asthma in Infancy and Childhood: Isaac A. Abt, M.D., Chicago.

Problems of the Rural Mother in the Feeding of Her Children: Alan Brown, M.B., Toronto.

Auto-Serum Treatment of Chorea: Alan Brown, M.B., and George Smith, M.B., Toronto.

The Baby's Father: Helen MacMurchy, M.D., Toronto.

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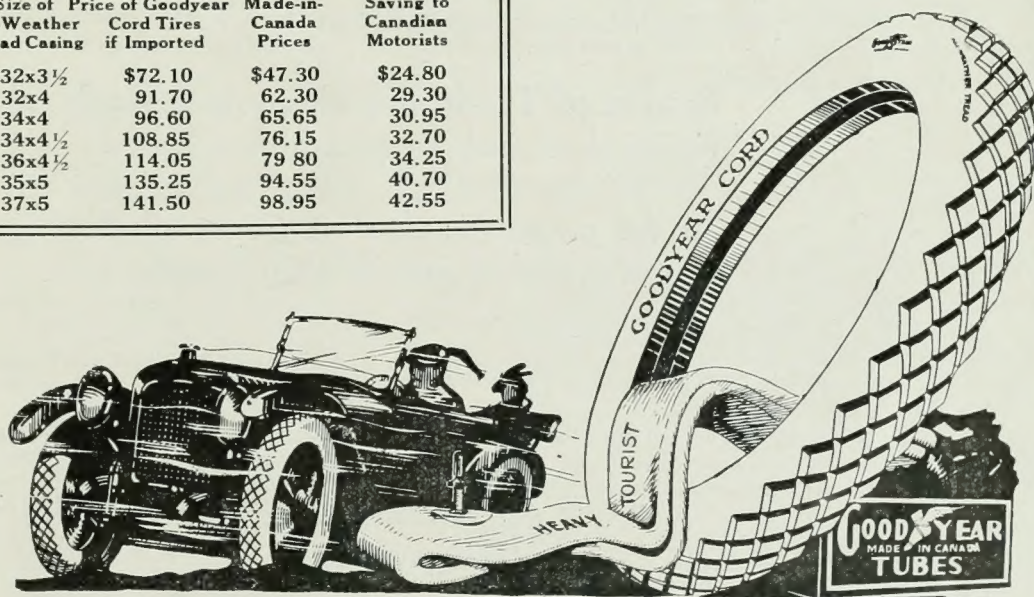
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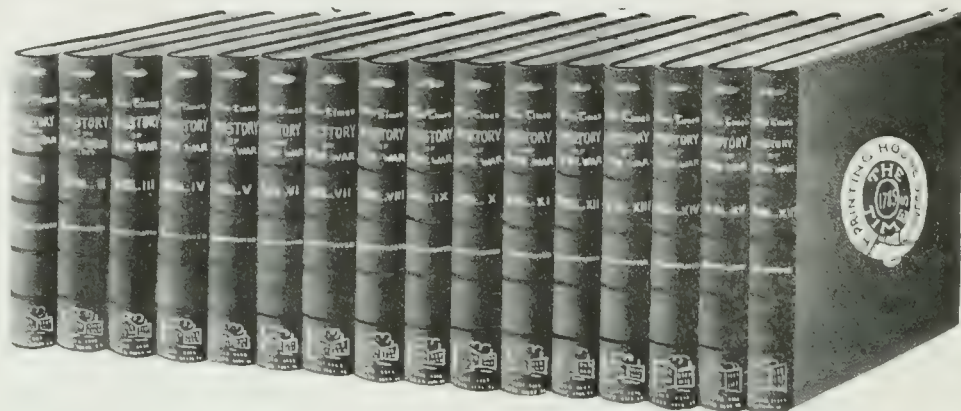
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# The Canadian Medical Quarterly

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VOL. IV, No. 2

TORONTO, CANADA

NOVEMBER 1918

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## ON PUBLISHING THIS JOURNAL

### THE PUBLISHER SPEAKS

" 'Bless your heart, MacLehose', wrote Daniel Macmillan about 1837 while still a shopman at £80 a year, to his old friend and fellow-craftsman, 'You never surely thought you were merely working for bread! Don't you know that you are cultivating good taste amongst the natives of Glasgow? . . . Bread we must have, and gain it by the sweat of our brow, or of our brain, and that is noble because God-appointed. Yet that is not all. As truly as God is, we are His ministers, and help to minister to the well-being of the spirits of men.' "

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What has this to do with Doctors and Medicine? Everything-Nothing. But it has to do with the honour of the Macmillans in Canada and a recent rather peevish question as to our bonafides has given us a chance to explain the reasons for publishing this periodical.

Recently the Editor of a Toronto medical journal published possibly in the interests of certain individuals complained that all attempts in Canada heretofore had been "dismal failures." I suppose there will be no one who differs from that editor's opinion. Certainly many of such should have been "dismal failures" in that some editor-proprietors have not been content to work wholly for the good of the profession, for the good of all, and their journals have therefore fallen dead, flat and unprofitable, not because they have been edited and managed by doctors, but that, being doctors and not independent publishers, they have allowed bias and sometimes selfish aims to rule where a lay publisher would draw the line.

Now publishing is as much a profession as is doctoring, and I admit I should make a poor doctor although I pass muster as a publisher of some success, after a quarter of a century of experimenting; and of course the Macmillans are the deans of publishing. It stands to reason, therefore, that we should be better able to produce a successful medical journal for the whole of Canada than could a doctor in his spare time.

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\* From "Memoirs of Daniel Macmillan" by Thomas Hughes, author of "Tom Brown's School-days."

foolish enough to ask him to do so. In any event, you buy our medical books subject to approval.

We have been asked on occasion who is our Editor, who constitute our Board of Advisers. Do you care, really? If the successive issues please you, if the reading matter is informative, lively, up-to-date, professionally ethical; if the scope is national rather than parochial; if the advertisements are properly censored and decent, and therefore helpful; if it is all these things and makes for the betterment of medicine, do you mind if we make some profit out of selling you books, and do you care who helps to publish YOUR magazine without loss to you or to us?

I have emphasized YOUR magazine. It is yours. It is yours to help and yours to criticize. This very article has been gone over and revised by a number of our friends in practice. They are our Board, and you are our Board. Will you serve? Will you help to build up a decent, a live, a proper--because a representative--paper in Canada? You will not be out of pocket, and we shall not be out if you will help.

Our first encouragement was from The Canadian Medical Association Journal which said:—

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and our last was the compliment of being asked to undertake the publication of the Memorial Volume of the Hamilton Convention Week. Our next encouragement will be when you write to us and say you approve of our publishing an independent journal, free from rancour, free from malice, free from politics, free from bias, the organ of no clique or school, knowing neither East nor West, but both.

Our cards are now all on the table. We are not in opposition to the official organ of the Canadian Medical Association, its editors we trust are friends of ours, our interests do not clash, but we are in opposition to all medical publications which are produced for possibly personal reasons, and selfish ends, which therefore of necessity suffer from restricted circulation—journalistic sclerosis (?)

Medical editors should not pose as givers of the Law. You are the givers of the Law. If we misinterpret your message we shall hear from you. If we should not agree with you we shall tell you why, but we shall not abuse you because we differ. We shall ask you to lend your experiences to your fellow practitioner, and him—his to you, both of which we shall publish for the aid of you both. We aim to be your Clearing House. Have you a better one? Have you any other? Will you draw on us? May we draw on you?

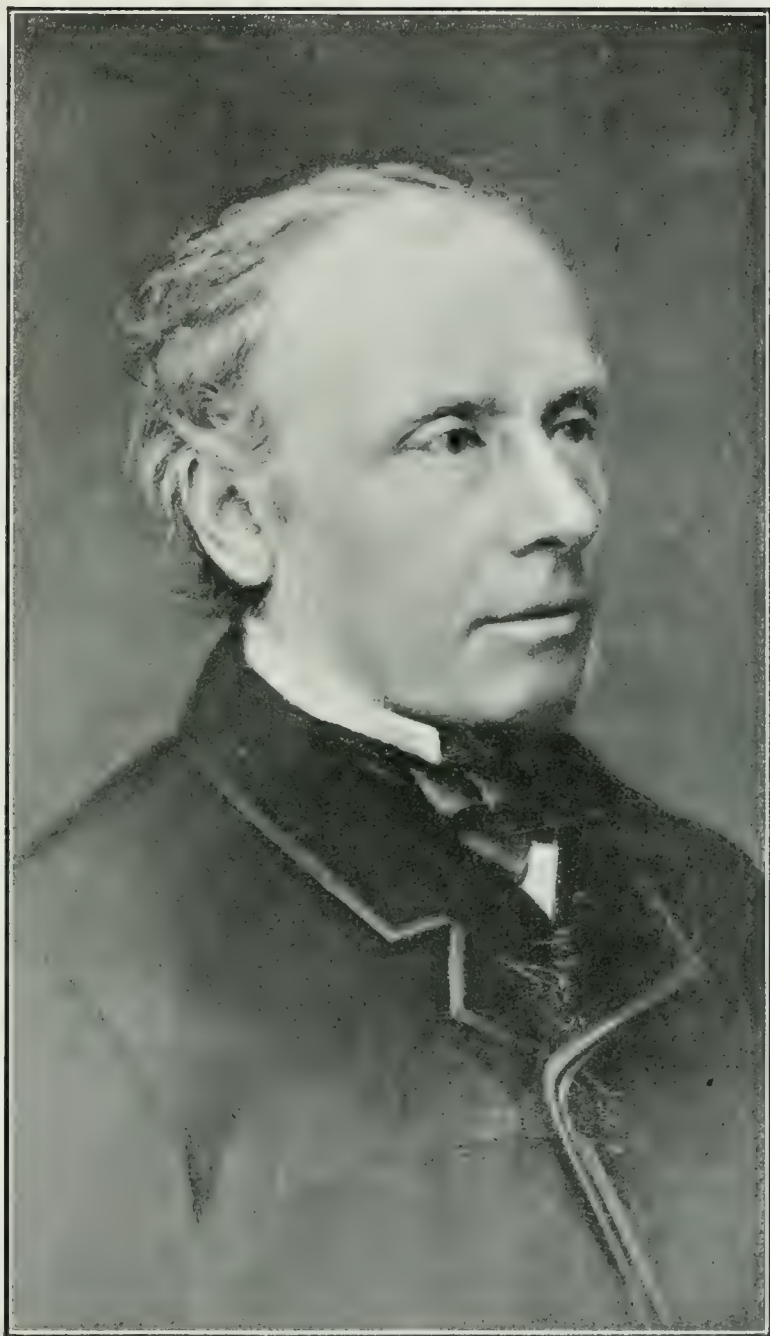
This is a long dissertation, but it is well to be quite plain when one wishes to be understood.



---

President, The Macmillans  
In Canada.





WILLIAM RAWLINS BEAUMONT

1803—1875





## WILLIAM RAWLINS BEAUMONT

William Rawlins Beaumont was born in Beaumont Street, Marylebone, London, in 1803. The family came originally from France and settled in England in the 14th century. After being educated at various private schools Beaumont became a student at St. Bartholemew's Hospital, London. This famous school was then attracting an ever increasing number of students under the inspiring leadership of that prince of teachers—John Abernethy. Beaumont had the singular good fortune to attract the attention of that eccentric professor, who made him his dresser. Later, in speaking of his pupil, Abernethy said: "He did very assiduously prosecute his studies for more than an ordinary length of time." This close association with his teacher made a lasting impression on Beaumont, and the friendship thus formed was never broken.

From St. Bartholemew's Beaumont went to Paris, where he remained for ten months. At that time Paris offered to students of medicine many inducements, especially in the subjects of anatomy and surgery. Amussat was then lecturing to crowded gatherings of savants, many of whom came from foreign countries to attend his lectures. Among those who sat at the feet of the great anatomist was Beaumont. But, not only was Amussat a renowned lecturer, but he was also a mechanical genius, and, in the shops of the instrument makers, were many surgical instruments made by him. Beaumont, while visiting these shops, at once became interested, for even at that period he was an inventor of no mean ability. There grew up between the Frenchman and the Englishman a strong bond of friendship, strengthened by their eagerness for knowledge and their similarity of tastes. In discussing his friend later in life, Amussat said of him: "Un zèle et un aptitude dare."

Before returning to England, Beaumont attended for a short period the University of Brussels. On December 23rd, 1826, he became a member of the Royal College of Surgeons. Later, in 1844, he was made an honorary fellow of the College. But his mind was still turned in the direction of new and improved instruments. In 1836, he invented and perfected an instrument for suturing in the operation for cleft palate. Of this instrument *The Lancet* said that it "was destined to make an epoch in the world's history." There is not the slightest doubt that it served as the model for the Singer sewing machine, Singer himself having taken the hint from a chance sight of the instrument in a New York window. It was admired greatly by Brunel, the great engineer. Beaumont also invented an instrument for tying polypi, a spectrum, and many others of surgical merit. Some of these instruments were at one time used in the General Hospital, Toronto. Beaumont's valuable donation of casts, instruments, and preparations may still be seen at the Royal College of Surgeons, England.

Beaumont practised for some time in London, where he was a surgeon to the Islington Infirmary. Like a great many surgeons of that period, however, he was anxious to enter the Army Medical Service. His friends interested themselves in his behalf, particularly Abernethy, who himself spoke to Sir James McGregor, the Director-general, on behalf of his friend and former pupil. But the army was not to have the advantage of his services. Yielding to the persuasions of a friend, Dr. Spear, who was going to Canada, Beaumont resolved to accompany him and to try his fortune in a new land. In 1841, he arrived in Canada and took up his residence in Toronto.

At that time medical education in Canada was being zealously guarded and advanced by a Medical Board appointed by the Governor-general. The Board inspected the diplomas of all qualified practitioners and examined students who had secured an indenture. It met quarterly for the purpose of examining those desirous of practising medicine, and, from the lists, one can find that quite a number were rejected by the Board. Beaumont, however, had no difficulty. In



the year after his arrival in Canada he was granted a license to practise, one of the examiners being the renowned Dr. Widmer. Three years later, in July, 1845, he became himself a member of the Medical Board, and, the records show that he was a regular and faithful attendant at its meetings.

From 1845, Beaumont held many important positions, from Professor of Surgery in King's College to Dean of that institution. His reputation as a surgeon soon spread throughout Canada. His work at the Toronto General Hospital, where he delivered the clinical lectures in surgery, was worthy of his great teacher, Abernethy. In 1868, he succeeded Dr. Widmer as consulting surgeon to the General Hospital. During the Fenian Raid of 1866, he had charge of the hospital at Port Colborne.

Beaumont was the author of numerous essays and addresses. Some of these were *The Treatment of Fractures of the Leg and Forearm by Plaster of Paris*, 1831; *On Polypi*, 1838; *Tumour of the Lower Jaw*, 1850; *Clinical Lectures on Traumatic Carotid Aneurism*, 1854; *The Several Forms of Lithotomy*, 1857; *A Deeply Penetrating Wound through the Orbit (five and a half inches deep) Recovery*, 1862. Most of his writings were published in *The Lancet*.

His last days were clouded by much suffering. In 1865, ten years before his death, he lost the sight of his left eye—the right eye being also affected. Until 1873, he was able to continue his surgical operations, where his unerring hand and great experience could still be applied with his impaired sight; but in that year he lost the sight of his right eye also. From this time, deprived of the ability to practise his profession, which was all in all to him in life, he withdrew from his old associations and lived a life of seclusion with his family. He died at the family residence, Toronto, on October 12th, 1875.

In life Beaumont was one loved by all who had the privilege of close intercourse and intimacy with him. His residence was on the north side of Wellington Street about 200 feet west of York Street, the land being vacant between his house and York Street and for a considerable distance north; that part of Toronto had during the last twenty years of his life been adopted as a residential locality and was a social centre of note. His family were intimately associated with all the social life of Toronto in the fifties and sixties. His personal connection and outstanding reputation in the Surgical profession made him a figure of considerable importance. There were, of course, surgeons of great experience who were his contemporaries and friends—among these were Dr. F. C. T. Arnoldi, who predeceased him many years, and Dr. E. M. Hodder, who survived him. His friendships call up names that are recognised as historical; among these may be mentioned;—the late Phillip M. M. S. Vankoughnet, Chancellor of Ontario; the late Henry John Boulton, Esq.; Clarke Gamble, Esq.; Samuel B. Harman, Esq.; William Wakefield, Esq.; John G. Ridout, Esq., and many others familiar to an older generation.

Beaumont had very special characteristics of his own. Until intimacy drew him out he was reticent in manner, but was always recollected by his friends as very courteous and always refined and dignified. He was gifted with lofty ideals. He was a devout member of the Anglican Church. He was, what was very rare in Canada in his day, an accomplished art connoisseur. He never was willing to use his profession as a money maker, content when he got a living, and so at his decease he was not blessed with much of this world's goods. It was his practice to accept no fee from those who he thought could not easily spare it, or from the Clergy, or his own profession. His maxim as he expressed it was "Rich is he who needs neither beg nor borrow." and he was content with that.

If he had been more intent on cultivating relations with the public, his great attainments and nobility of character would have made him a popular hero. The truth of this is well illustrated by a reminiscence which is still extant among those acquainted with the traditions of life in Toronto in Beaumont's days. It is this: In the late fifties a resident of Toronto, afflicted with the necessity of surgical assistance, hied him to New York where he consulted a Specialist for his particular ailment. As soon as the specialist learned that he was from Toronto, he informed his patient that he had made a great mistake in coming to New York for the purpose he had in view. "There was only one man in North America capable of doing what was required." That man was Doctor Beaumont.

## A REPORT ON THE EFFECT OF HIGH CARBOHYDRATE FEEDING ON THE NAUSEA AND VOMITING OF PREGNANCY.

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Simple, moderate and pernicious nausea and vomiting have long been a serious menace to the pregnant woman, and a persistently difficult matter for the medical practitioner to combat. For many years strenuous efforts have been made, both from the laboratory and the clinic, to understand the causes which underlie this most distressing and sometimes serious condition and thus to remove the treatment of it from the realm of empiricism. Among the many workers in this field on this continent one may mention Williams, Ewing, Stone, Murlin, Slemons, Chipman, D. J. Evans and De Lee. So numerous indeed have been the attempts in this direction that it would almost seem superfluous to present to the world another contribution on this subject. We have, however, attempted to approach the general subject of the toxæmias of pregnancy from a new angle. We deemed it advisable and instructive to investigate the very mild and almost innocuous types of early nausea and vomiting, instead of the more aggravated and serious conditions which usually are the subject of study in this field. We felt that, in this way, it might be possible to disentangle perhaps one or two factors which compose the clinical picture in its serious aspects. We deal in this paper with the types of toxæmia known, in its milder form, as "simple nausea and vomiting" or so-called "morning sickness," and, in its severer form, as "pernicious vomiting." The relationship of the earlier toxæmias to those occurring later in pregnancy still remains to be elucidated, though there is a large amount of clinical evidence that an underlying connection exists between the two. We reserve our study of the later toxæmias from the standpoint expressed in this paper to a further communication.

### HISTORICAL REVIEW

Williams was one of the first to classify the nausea and vomiting of pregnancy into types. He recognised three types:

- (a) Reflex.
- (b) Neurotic.
- (c) Toxæmic.

The first is relatively a very rare condition, the writers having met but three cases of incarceration of the pregnant uterus where vomiting was present, and at the same time we have met with the condition of incarceration twice, where pain and even threatened abortion was evident, with all evidence of vomiting absent. Even in the three first-mentioned cases, vomiting and nausea was not relieved by correction. Evans reports one case of severe incarceration with no nausea and vomiting. Chipman\*\* further reports three cases occurring during the past year with no such accompanying condition. Reflex irritation may be a secondary factor in the development, but most obstetricians refuse to believe it to be a causal one. Appropriate obstetrical treatment in a condition of this kind would, of course, relieve its influence. In this same type of cases we have placed the so-called reflex irritations of a long, narrow cervix, a rigid os and the influence of new growths.

The second type, or neurotic one, was supposedly distinguished from the toxic type by a study of the ammonia coefficient of the patient's urine. It might be as well to explain to those who have not been interested particularly in chemical terms that the term ammonia coefficient is used



to express the relation of the ammonia nitrogen to the total nitrogen in urine. Severe vomiting, with a low ammonia coefficient, led to the diagnosis of a neurotic type; the toxæmic type was distinguished by a high ammonia coefficient. This view is still maintained by its author, though not in its entirety, in spite of the evidence to the contrary especially by Stone (2), and by Ewing (3), who independently showed that many cases of pernicious vomiting with a low ammonia coefficient undoubtedly belonged to the toxæmic type.

We have been inclined, as a result of our investigation and its consequent results by treatment, to incorporate this second or neurotic type with the third or toxæmic type, and to look upon the neuroses as an exhibition of a disturbance of the nervous system by the toxæmia. In support of this we would put forward the facts of our experience of over seventy separate cases of this condition, and would draw your attention particularly to many cases where we had to deal with an absolute disinclination and even an antagonism to the continuation of the pregnancy. The neurotic element, without question, plays a large part as a secondary factor in these conditions, but in none of our cases could we allot to it a causal position. From this it will be apparent that we should prefer to place the nausea and vomiting of pregnancy solely under the one very general term of toxæmia.

The nature of the toxæmia is not by any means clear. That it could arise specifically from the foetus or the placenta as a specialised toxin, or toxic metabolic product, seems hardly possible in view of the reported occurrence of pernicious vomiting in presence of hydatidiform mole. Nevertheless a vast amount of research has been carried out on such lines, and many attempts have been made, with reports of cures, to develop an anti-toxin in the body of the mother. The serum of the non-vomiting woman, taken from her desirably in the puerperal state, during the first ten days post-partum, and injected into a patient suffering from this condition, has frequently been used. The very number, however, of these attempts with reported successes and then reported failures, leads one to regard with suspicion the possibility of the solution of the problem by this method of attack, and we do not, in this report, intend to review this particular phase of the literature.

The recent developments of the physiology of the ductless glands and their connection with the sexual organs, combined with their pronounced effect on metabolism, naturally has led to an investigation of their effect upon the pregnant state. Foulkrod (10) and Ward (11) claim splendid results from the administration of thyroid extracts. Placental extract has many advocates for its efficiency. Extract corpus luteum and adrenalin also have been enthusiastically recommended and endorsed by many admirers. Personally we have occasionally tried these, empirically it is true, but have found them of very doubtful assistance.

The theory of intestinal putrefaction products being the cause of pernicious vomiting was put forward by Dirmoser (8), who adduced evidence in its support. Without doubt, regularity of the bowel movement is an essential towards good health in pregnancy, even more so than in ordinary conditions, and no one doubts that intestinal putrefaction products may become a serious factor in pernicious vomiting, and, moreover, might even become an exciting cause in special cases. We have, however, many cases in our series where nausea and vomiting were present even to the pernicious type, although elimination by the bowel was proceeding normally. Furthermore, cases of uterine incarceration of such a marked degree as to bring about almost complete rectal obstruction do not necessarily cause nausea and vomiting. A case was reported to us by Dr. D. J. Evans, of Montreal, where a patient suffered from marked incarceration of the uterus between third and fourth month of pregnancy, to such extent that the overloaded bowel was distinctly palpable as a large tumour mass through the abdominal wall, and yet the patient at no time in the weeks preceding relief showed any signs of nausea or vomiting.

The maternal liver has also been prominently put forward as the seat of the trouble. Post-mortem examinations of that organ of patients dying of pernicious vomiting and of eclampsia have revealed very often an extensive degeneration of the fatty type. The similarity of the symptoms of pernicious vomiting with chloroform, arsenic and phosphorus poisoning and the acute yellow atrophy of the liver in pregnancy have been emphasised time and time again.

Based on the nitrogen partition of the urine, and the finding of a high residual nitrogen, Stone

put forward the theory of "sub-oxidation." He believed that the failure of the maternal metabolism lay in the inability of the liver to cope with protein in the normal way, and that some protein escaped its normal destruction. In support of his views he claimed to have isolated from such urines as showed a high residual nitrogen, crystals of leucine and tyrosine.

"Ewing" and "Ewing and Wolf" particularised the failure to destroy protein as a failure of deamination of the amino acids. They too, found a high residual nitrogen, more especially in eclampsia, though they failed to corroborate Stone's crystals of leucine and tyrosine.

"Martin and Bailey" (5) held similar views, but were, however, unable to find any increased amino acid nitrogen in the urine. This point was decided by Van Slyke and Losee, who, using the former's well-known and accurate gasometric method for the determination of the amino acid nitrogen in urine and blood, failed to find any increase in that fraction of the nitrogen in either fluid. The theories of Stone and Ewing are, therefore, to be abandoned. Van Slyke and Losee did find that eclampsia was distinguished by a low urea nitrogen, and that pernicious vomiting was alike "distinguished by a high ammonia coefficient."

The significance of the high ammonia coefficient in pernicious vomiting had, previous to the work of Van Slyke and Losee, been severely criticised by Underhill and Rand (7), who were disposed to ascribe the change in the urinary picture in that condition as due to mere starvation. Williams (1a) combats that view in its entirety, citing cases where, after emptying the uterus and the cessation of vomiting had occurred, the ammonia coefficient fell to a low value, although no food had been taken.

Acidosis has been put forward also as the cause of the toxæmia (Zweifel (9)). It has recently been shown, however, by Van Slyke and Losee that a general acidosis, as revealed by a depletion of the alkaline reserve, does not exist to a very pronounced extent. There is even in normal pregnancy, where all symptoms of toxæmia are absent, a mild degree of acidosis, which is perhaps slightly increased in pernicious vomiting, but in neither the normal nor toxic pregnancy does an acidosis exist to that extent found in nephritis or diabetes, and of such severity as to account for the symptoms, except possibly in the last or comatose stages. The presence of acetone bodies in the urine has frequently been noted in cases of pernicious vomiting, but that these were the cause of the toxæmia was vigorously denied by Ewing, who, discussing the question from the general standpoint of acid intoxication, pointed out:

(1) That acid intoxication, as evidenced by the appearance of ammonia and acetone bodies in the urine, occurs in many well-investigated conditions, without the appearance of toxæmic symptoms.

(2) That the administration of alkalies (diabetes) and carbohydrates (pernicious vomiting) removes the evidence of acid intoxication from the urine, but leaves the symptoms (clinical) unaltered.

(3) That acids have never been obtained from the blood in anything like the quantity required to produce the symptoms, while the administration of acids in large quantities is required to produce the toxic symptoms in healthy animals, and even then these symptoms do not closely resemble those of the true toxæmias.

From this very brief review of the literature it will be seen that neither from the point of view of cause or cure has any satisfactory solution of the problem of nausea and vomiting or pernicious vomiting been arrived at. Rest in bed, forced fluids, attention to excreta, diet, and control of the nervous system by the use of mild and strong sedatives, appears to be the most commonly adopted procedure for this condition.

### GENERAL THEORETICAL CONSIDERATIONS

It is evident from the above review, that no one theory has succeeded in accounting for the toxæmias of pregnancy; and it occurred to us, as no doubt it has occurred to many, that, although perhaps there may be behind the toxæmia one causal factor, the clinical picture is compounded of many factors, and that the problem should be attacked by attempting to differentiate the several factors in the same individual. In this connection the study of nausea and vomiting



and its more serious stage, pernicious vomiting, of pregnancy, especially in their earlier stages before the clinical picture has become complicated by too many secondary effects, should prove of especial value. The nausea of pregnancy, with or without occasional vomiting, either continual or intermittent, such as the so-called "morning sickness," occurring at the very beginning of the pregnant period, is too frequently not regarded as a serious condition. Yet it is most certainly the precursor of pernicious vomiting, and its study should show some light on that vexed problem.

In connection with the milder or intermittent type, it is to be noted that the majority of cases show the symptoms as "morning sickness." The nausea, or vomiting, disappears during the course of the day only to reappear the following morning. This would appear to depend upon the presence or absence of food. Indeed, the treatment of this condition, we all know, is usually effected by attention to the patient's dietetic and hygienic habits, directed in a more or less vague and general manner. This would all point strongly to the presence of a metabolic factor, and that in the earlier and presumably simpler form of pregnant toxæmia, this factor was the dominant one.

Of the various metabolic factors, the one most susceptible to disturbance is well known to be that of the carbohydrate. In endeavouring to trace out how such a disturbance could take place, the author's attention was directed to the work of Imrie and of Mottram. The former has shown that the growing fœtus is greedy of unsaturated fat. The latter, that often in the pregnancy of nervous and ill-nourished animals, the liver becomes overloaded with fat, that is, there is increase of fat present, which has come in from the fat depots. Mottram has also shown that a simple hunger of a few hours duration, in some animals, led to the same condition. The phenomena are more or less physiological in character, as the effect on the liver is a transitory one. It seemed possible then that these two factors, pregnancy and a short period of hunger, might account for the periodicity of morning sickness, and that the metabolic factor here concerned was a temporary relative lack of glycogen in the liver. Such a condition, it is well known, leads to a fatty infiltration of that organ.

Two things should follow from this view. Such a condition of the liver is usually associated with an acetonuria, accompanied generally by acetoacetic and oxybutyric acids, evidence of which should be found in the urine of these patients.

Such a condition is obviated by keeping present in the patient an adequate supply of carbohydrate.

We may say at once in all cases of nausea and vomiting in pregnancy which we have studied, except in two of the very mildest ones, we have found the acetone bodies present in the urine. Those cases where we found it absent were mild ones of morning nausea, but in these particular cases we were not able to obtain and examine the freshly voided over-night specimen which we wished. It must, at this point, be clearly emphasised that we do not regard the presence of acetone bodies as the cause of the nausea or vomiting. We regard them as a secondary result. Ewing's arguments on this point are conclusive.

As stated previously, the basis of our work has been an attempt to trace out the influence of the metabolic factor in this nausea and vomiting. Lack of glycogen in the liver, with its precursor, insufficient carbohydrate diet, was held to be a possible disturbing element in the early forms and our success with carbohydrate feeding bears out this supposition.

As a source of glycogen for immediate treatment we have used glucose, cane sugar, and lactose. The administration of large doses of cane sugar, or glucose, over a protracted period of time, is, however, with many patients, a practical impossibility; the excessive sweetness in itself becomes a source of discomfort, if not an irritant. We soon had to fall back upon lactose as a practical convenience. Here the use of lactose, either by mouth, or rectum (in the more severe cases of vomiting), met with very encouraging results, and we may safely state that we have treated over seventy patients, representing nearly all grades of nausea and vomiting, from the mildest nausea to the most pernicious type, in this manner, without meeting with a single failure.

It will, no doubt, be pointed out that many of these cases, especially those of the mild type, would have recovered without treatment. We are quite prepared to grant this, but possibly it would have meant weeks or months of discomfort, and even the danger of a progression towards the more dangerous point. In reply we would state from the experience in our hands that by so

keeping up the carbohydrate supply by this method, recovery has been most rapid, especially in the mild cases—a matter of a few hours. Furthermore, by continued observation and treatment, the patient in only two severe cases showed signs of a reversion. Five severely toxic vomiting cases, in whom previous terminations of pregnancy had to be resorted to, were carried to full term and the delivery of a healthy child. One must note in passing that but two cases, in this series of over seventy, under this treatment gave a positive lactosuria test, when on a lactose regime.

The effect produced is not purely a psychological one. We possess instances of marked success in cases where the termination of the pregnancy was desired and sought, often, indeed, to the extent of the patient antagonising every attempt to administer the remedy by mouth or rectum it being necessary to resort to submammary injection of glucose. In spite of this, and although these instances occurred in severely toxic conditions, they were carried to successful issue at full term. One striking case of success against psychological influence was in the pregnancy of a young woman who, having before her marriage been a nurse, read the prescription for lactose given her, and decided she was being given a harmless placebo. In spite of an antagonistic mental attitude, she took the remedy and a moderately severe vomiting with continual nausea and anorexia, completely disappeared within forty-eight hours, and did not trouble her again.

Also, we must lay stress on the fact that as soon as possible we have placed the patient on a high carbohydrate diet. The carbohydrate was drawn from mixed sources, and we have insisted upon a preponderance of fresh fruit and vegetables in the diet. We have not limited the patient to any great extent; we have, however, cautioned her strongly against excess of any one particular dish, and have advised a very moderate use of such dishes as are high in fat content. In this category we have placed butter, cream, pork, salmon, etc., and we have done this merely as a precautionary measure to avoid, as far as possible, disturbances to the patient's digestive system.

We are aware that these results bring us into conflict with the experiments of Ewing and Underhill and Rand, who, by administering glucose, sometimes in very large doses, failed to improve cases of severe pernicious vomiting. For the present, however, we wish to rest our case on the positive results we have obtained, but later we intend to present evidence that at any rate in some cases of pernicious vomiting the use of glucose alone is without effect.

#### DETAILS OF TREATMENT

1. Divide into three groups,—Mild, Moderate, Severe.
2. Daily routine examination of urine—total quantity, acetone reaction and its intensity, gravity, albumen, sugar, bile.
3. *Rest*—  
Mild cases, limit demands of housekeeping, etc.  
Moderate cases, rest in bed.  
Severe cases, rest in bed with isolation.
4. *Excretion*  
Correct defects in functions of lung, skin, kidney, bowel.
5. *Diet*  
Mild and Moderate cases, eliminate proteids and fats for forty-eight hours. Force carbohydrates, fruit, cereals, green fresh vegetables.  
Severe cases, absolute rest from all food by mouth first forty-eight hours. Begin carbohydrates as soon as patient may be able to retain them. To be given frequently and in small amounts.
6. *Medication*—  
Mild Cases, lactose solution 5% one and one-half quarts daily by mouth.  
Moderate cases, lactose solution 5% to 10% one and one-half quarts daily by mouth, if possible—when not retained, this solution may be given by rectum—using a urethral catheter, giving very slowly ten oz. and repeating every four hours.  
Severe cases, sterile glucose solution 5% ,200 cc., under each breast for one treatment, then use method of rectal injection.



In both Moderate and Severe classes, the administration by mouth should be restored to as soon as possible.

7. When the nausea and vomiting are fully controlled, the amount of lactose per day may be reduced to fifteen grammes, later this may further be reduced to a fifteen gramme dose tri-weekly. In all cases the reduction of the treatment or its discontinuance must be guided by an examination for acetone bodies in the urine. Lactose is more preferably used because of its decided diuretic action.

8. Return to a diet mixed with proteid may be made so soon as the nausea and vomiting are in control, but a return to the fats must be slowly made.

9. Stomach lavage, mustard counter-irritation, sedatives, narcotics, may be used to relieve acute conditions and suffering, but are for obvious reasons to be avoided. We have found the use of these measures of but doubtful benefit in two cases out of our series of forty-two.

We have, in our experiments, met with seventy cases of vomiting of pregnancy. These have been divided, according to the severity of the condition of toxæmia as exhibited by clinical evidence, into three groups, Mild, Moderate and Severe or Pernicious.

In the Mild type—forty-two in number—nausea was present in all at least once daily, usually in morning, although thirteen were bothered more at bed time.

Nausea and vomiting in the morning in twenty-seven.

Nausea and vomiting twice daily in fifteen.

In this group we have included cases of spasmodic nausea or vomiting occurring not oftener than twice daily. The presence of acetone bodies in the urine was detected in all urines but two.

The intake of food in these cases was not appreciably interfered with.

All cases were delivered at full term of healthy children.

Moderate type, including those cases where the nausea was continued and the vomiting more frequent than twice daily, some distinct signs of toxæmia as malnutrition, drowsiness, nervous irritability, furred tongue, headache, anorexia, constipation and decreased urine output. Acetone bodies were readily demonstrated in all these cases. Of these cases we had under observation seventeen.

All these cases terminated with favourable results to mother and child.

Severe type, or Pernicious vomiting. This group, eleven in number, were all of the most serious kind. In all cases, nausea and vomiting were continual, independently of an attempt to inject food. The patients came under observation in a most serious state. In four the vomitus was coffee ground in nature, in seven jaundice was apparent, in two jaundice was marked. All showed bile in the urine. Five showed albumen and casts.

All were constipated.

Urinary output in all markedly diminished.

Pungent and distinctly acetone odour to breath.

Furred tongue.

Marked nervous irritability in ten.

Semi-coma in one.

Acetone bodies markedly demonstrated in all.

Headache marked in nine cases.

Epigastric pain severe in ten cases, mild in one.

Temperature in all cases slightly subnormal.

Pulse, rapid, weak, thready, average 116 per minute.

Cardiac area in all but one case somewhat enlarged.

Liver in all cases enlarged. Not markedly.

Kidney tender.

#### RESUME OF RESULTS

In the Mild and Moderate cases the results from treatment along these lines were most gratifying.

Complete and continued relief occurred in twenty-eight cases within forty-eight hours.

Complete relief from vomiting, but with occasional returns of nausea, resulting in many of the cases where we were able to trace indiscretions in diet, occurred in twelve cases.

Two cases showed a continual nausea with hyperacidity throughout entire pregnancy; both of these cases continued full term with no graver symptoms developing.

The Moderate group—

Fourteen of these cases gave evidence of immediate and continued relief within one week of the installation of treatment.

Three cases were more stubborn and showed some tendency to revert to the Pernicious type. With more complete isolation in hospital wards, success was very speedily obtained.

In these Mild and Moderate groups it may be as well to state that in forty-six cases pregnancy had not advanced past the first ninety days before treatment was commenced; the remaining thirteen cases were between the third and sixth month.

The Pernicious group, eleven in number—

In eight cases severe vomiting developed within the first 120 days of pregnancy.

Three cases showed an occurrence of vomiting within first 120 days, with one or more recurrences during the remainder of the pregnancies.

Seven cases were primipara.

Four cases were multipara.

In three of the multipara pregnancy had been terminated for toxic vomiting. In two women twice, in one once.

All eleven women were carried to full term and delivered of healthy children. One of the most interesting cases was of a patient who was delivered at full term of twins.

In summarizing our results in a general way, the following points are to be noted:

- (1) We have proceeded on the assumption that in the early toxemias of pregnancy the dominant factor is a metabolic one.
- (2) We have utilized the physiological results of Imrie and of Mottram to connect the fatty degenerated liver found in post-mortem examination of fatal cases of pernicious vomiting with the early and moderate cases of vomiting.
- (3) We have assumed a temporary lack of carbohydrate supply.
- (4) We have found, in practically all cases of nausea and vomiting in pregnancy, the occurrence of the acetone bodies in the urine.
- (5) We have endeavored to correct the deficiency of carbohydrate supply by administering glucose or lactose, but mainly the latter, and supplemented this by a high carbohydrate diet.
- (6) In this way we have successfully treated over seventy cases of nausea and vomiting in pregnancy, including several severe cases of the Pernicious type.

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(9) Zweifel. Munchen Med. Woch., 1906, Vol. liii., p. 297.

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(11) Ward. Surg. Gyn. Obst., 1909, Vol. vii., p. 617.



## TOTAL THYROIDECTOMY

**Procedure.**—I now proceed to a careful description of the various stages of thyroidectomy, while giving prominence to the modifications that I have carried out in the technique formerly used in this operation, and which have made it rapid in execution as well as void of danger.

**FIRST STAGE: INCISION OF THE INTEGUMENTS.**—It was in 1877 that I conceived the idea of replacing the **U**-shaped incision, then recommended for thyroidectomy, by a straight transverse incision made over the most prominent part of the tumour. I first used this incision in the case of a young female patient, in order to avoid the disfiguring cicatrix of the **U**-incision. Ever since that first operation I have employed the following procedure without exception: The platysma is divided along the whole extent of the incision, and the superficial veins are retracted by the method of divulsion. The cutaneous incision is made slightly lateral when the tumour is limited to one of the lateral lobes.

**SECOND STAGE: EXPOSURE OF THE TUMOUR.**—When of small volume, retraction of the subhyoid muscles suffices without division. The median veins are retracted—if necessary, divided between two ligatures—and the cellular capsule of the goitre is exposed by divulsion. When requisite, the subhyoid muscles are divided transversely as far as is necessary.

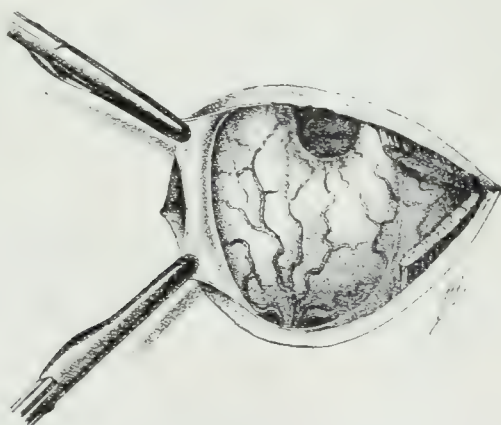


FIG. 1.—THYROIDECTOMY.

First and second stages. On the right side of the figure is seen the section of the subhyoid muscles; on the other side, elevation of the capsule and exposure of the thyroid body.

### ERRATUM

This article is taken from Volume II *Surgical Therapeutics and Operative Technique* by E. Doyen, English edition prepared by the author in collaboration with H. Spencer Browne, M.B. Cantab., etc.

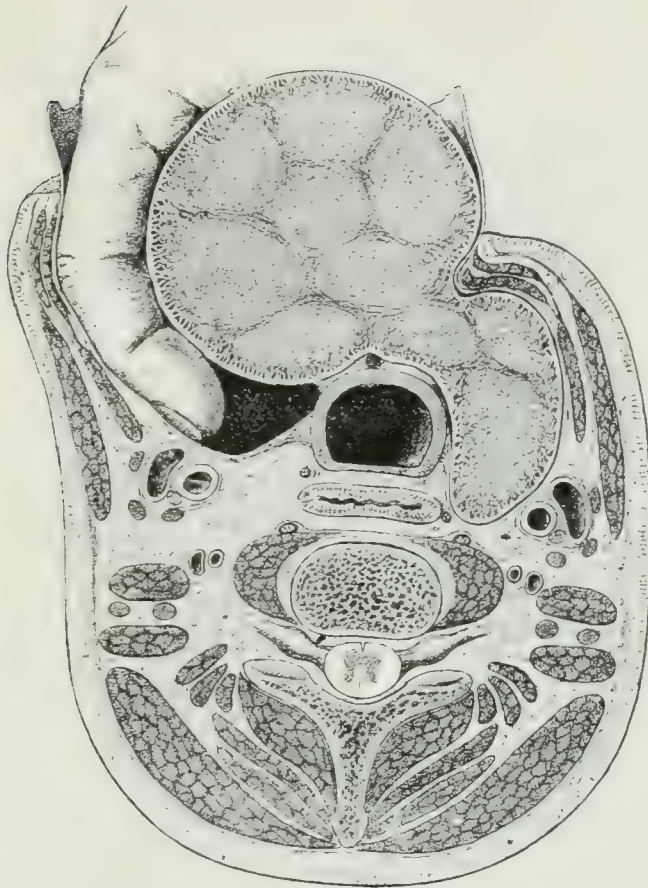


FIG. 2. INTRAGLANDULAR ENUCLEATION.

The finger has been introduced into the permeable space situated between the visceral sheath and the glandular capsule, and forcibly luxates the tumour through the wound.

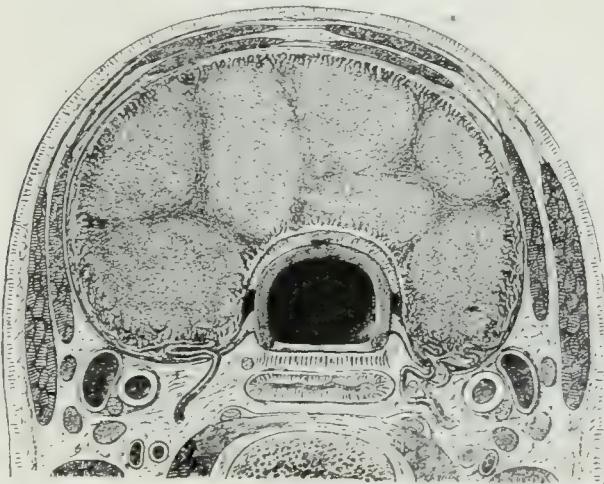


FIG. 3.—SINUSITIES FORMED BY THE INFERIOR THYROID ARTERY ON PERFORATION OF THE PERIGLANDULAR CELLULAR CAPSULE.



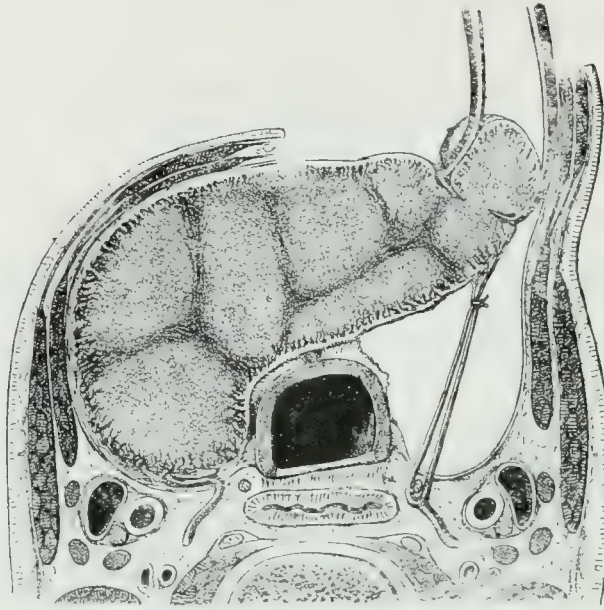


FIG. 4. ELONGATION OF THE ARTERY AND ITS BRANCHES AS THE GOITRE, AFTER BEING DETACHED FROM ITS CELLULAR CAPSULE, IS LUXATED THROUGH THE WOUND.

On the right side is seen the elongation of the anterior branches which surround the recurrent nerve, while the nerve itself is not drawn forwards.

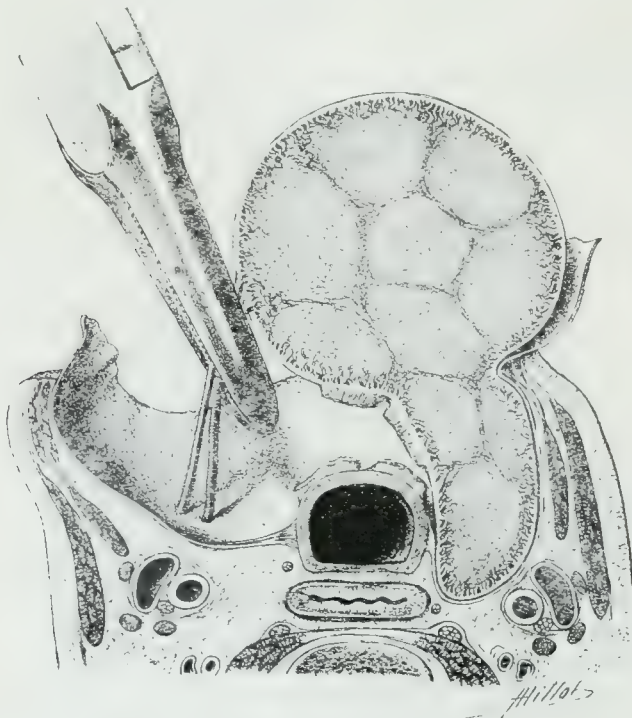


FIG. 5.—SCHEME OF HÆMOSTASIS IN EXTRAGLANDULAR ENUCLEATION.

It is enough to tie the anatomical vascular pedicles after having crushed them quite close to the thyroid tissue. The considerable distance which separates the instrument from the recurrent nerve will be noticed.

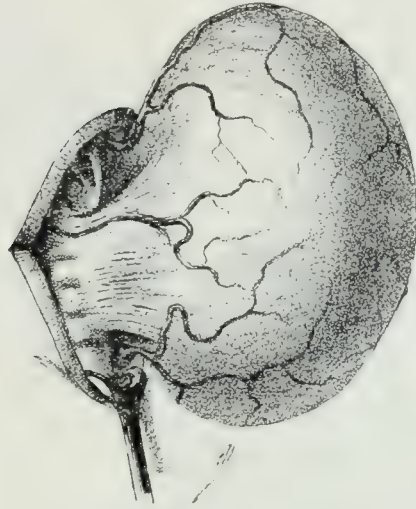


FIG. 6.—UNILATERAL THYROIDECTOMY.  
Fourth stage: Formation of a single pedicle.

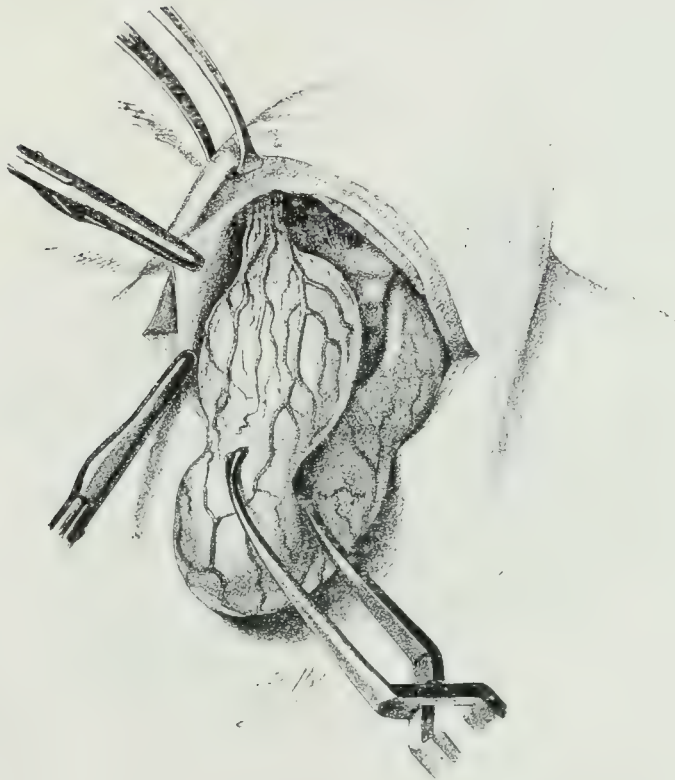


FIG. 7.—THYROIDECTOMY.  
Fourth stage: Enucleation of the tumour and formation of the superior pedicle



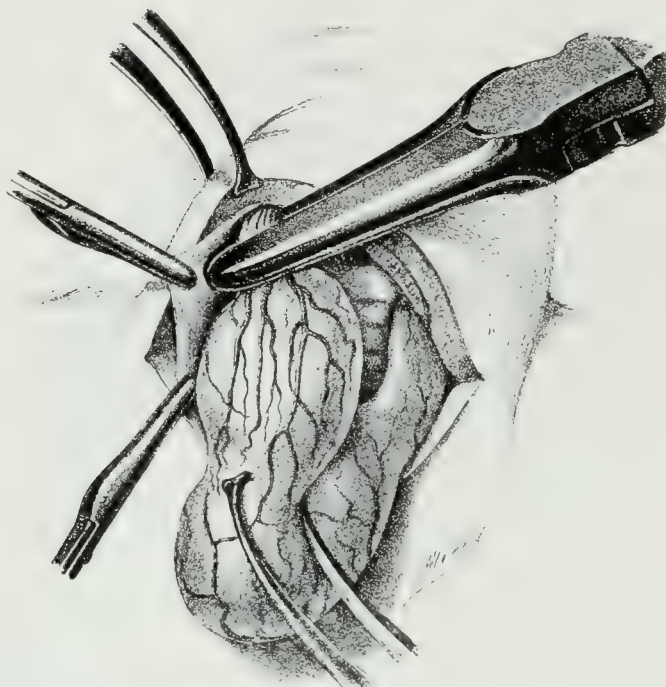


FIG. 8.—THYROIDECTOMY: CRUSHING OF THE SUPERIOR PEDICLE

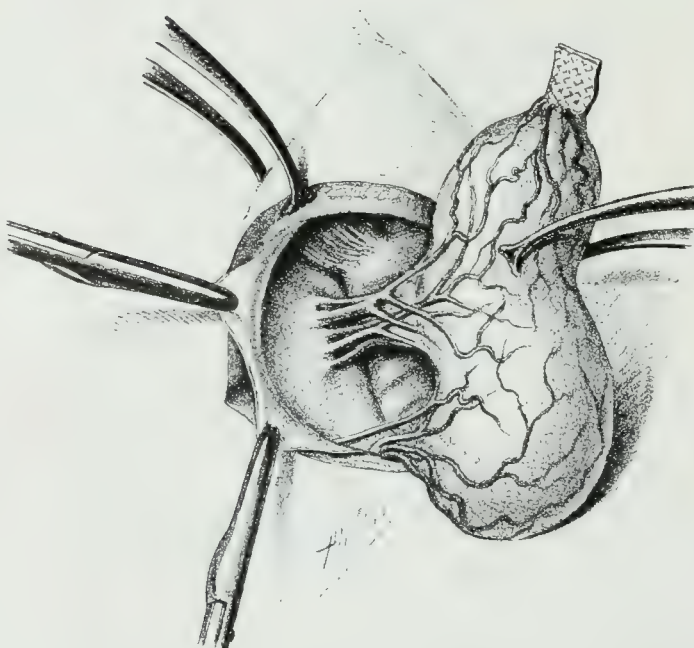


FIG. 9.—THYROIDECTOMY: FORMATION OF THE MEDIAN PEDICLE.

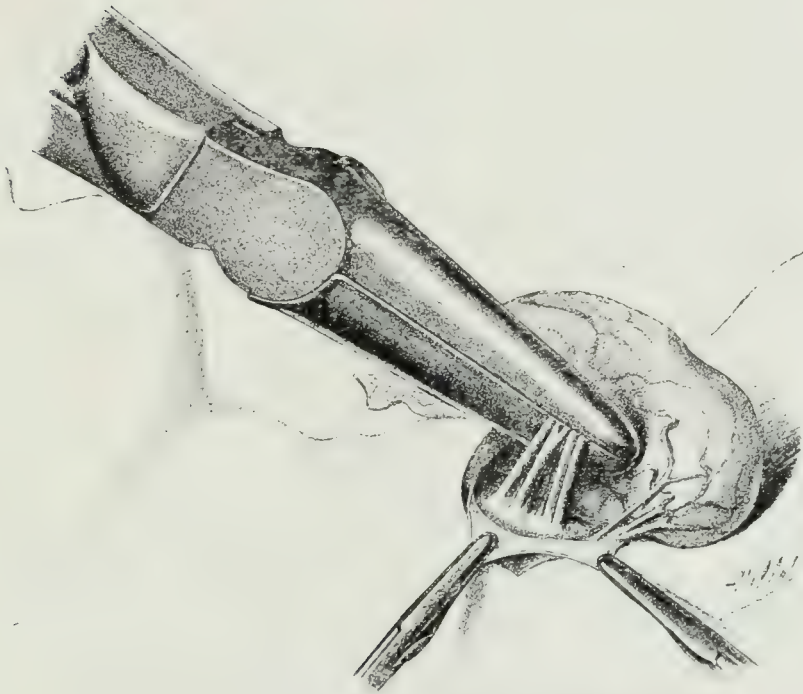


FIG. 10.—THYROIDECTOMY: CRUSHING OF THE MEDIAN PEDICLE.



FIG. 11.—THYROIDECTOMY: LIGATURE OF THE MEDIAN PEDICLE COMPLETED  
FORMATION OF INFERIOR PEDICLE.



**THIRD STAGE: LUXATION OF THE TUMOUR TO THE OUTSIDE OF THE WOUND.**—When the cellular capsule of the goitre has been incised and the thyroid body exposed with its vascular network, the index-finger is introduced between the tumour and its capsule, from which it isolates it in a few moments. This manœuvre may be so rapid that the tumour is displaced through the wound in a few seconds. It is some times necessary to facilitate the luxation of the tumour by seizing it between the jaws of a broad annular forceps. It may be necessary in other cases to extend the commissures of the wound by divulsion. When outside the wound, energetic traction is made on the tumour, so as to expose the vascular pedicles thoroughly. The relations of the inferior thyroid artery with the recurrent laryngeal nerve are intimate, especially on the right side, where the nerve often passes between its branches; and this artery forms numerous sinuosities before penetrating from the perithyroid cellular capsule into the thyroid body. Traction on the tumour elongates its vascular pedicles, and places them in full view (Figs. 1 to 9).

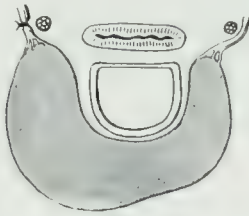


FIG. 12.—DIAGRAM SHOWING THE DANGERS OF WOUNDING THE LEFT RECURRENT NERVE WHEN TYING THE MIDDLE THYROID ARTERY ACCORDING TO THE OLD METHOD.

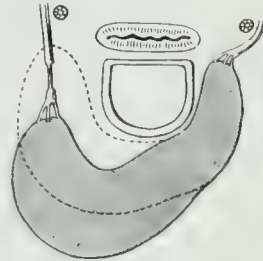


FIG. 13.—DIAGRAM SHOWING THE WITHDRAWAL OF THE RECURRENT NERVE IN LIGATURE OF THE INFERIOR THYROID ARTERY BY MY METHOD OF ENUCLEATION EN MASSE AND CRUSHING.

**FOURTH STAGE: FORMATION AND LIGATURE OF THE PEDICLES.**—This stage of thyroidectomy varies greatly, according to the localization of the tumour.

Figs. 7, 8, and 9 show a lateral parenchymatous goitre, which has been pedunculated by a single stroke of the *écraseur*. Fig. 6 represents a unilateral goitre, at the moment following its luxation to the outside of the wound. The lateral tracheo-thyroid ligament is distinguishable.

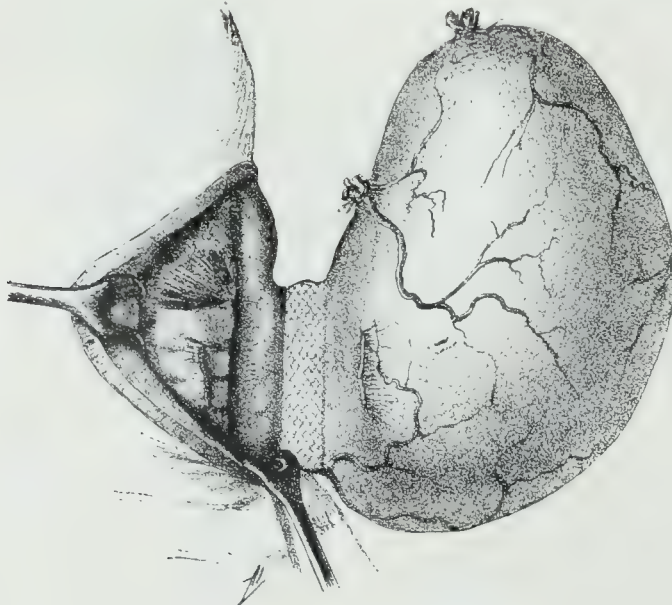


FIG. 14.—UNILATERAL THYROIDECTOMY: ISOLATION OF THE TRACHEA AND CRUSHING OF THE THYROID ISTHMUS.

On applying sufficiently energetic traction to one of those goitres, the pedicle undergoes sufficient elongation to allow crushing at a single stroke, and ligature *en masse*. The double Dionis's knot is used in order to secure the fixation of the ligature.

It is often necessary to for ma number of pedicles. Fig. 7 shows the appearance of the superior pedicle, which is the first to be crushed and tied (Fig. 8). We then pass to the middle pedicle, which is also crushed and tied (Figs. 9 and 10). The ligature of this pedicle is seen in Fig. 11. Fig. 12 shows the ligature of the inferior thyroid artery, as formerly applied in the depth of the wound and with danger of wounding the recurrent nerve. On the other hand, if my technique is adopted, the artery is found elongated, as shown in Figs. 5 and 13. By this

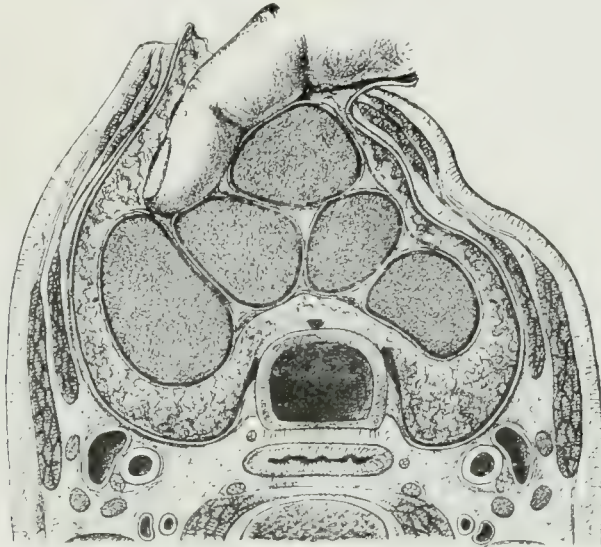


FIG. 15.—DIAGRAMMATIC SCHEME OF INTRAGLANDULAR ENUCLEATION.

After section of the different subhyoid planes, and opening the capsule of the gland, the finger is introduced into the proper thyroid tissue, where it meets the polycystic mass, which is then readily enucleated.

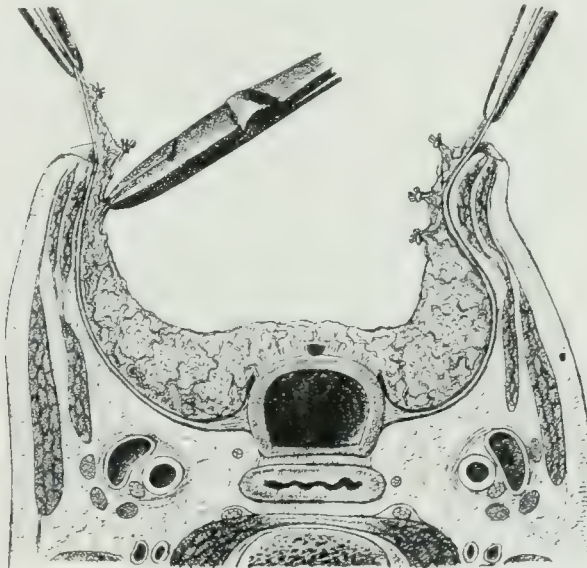


FIG. 16.—DIAGRAMMATIC SCHEME OF HÆMOSTASIS IN A CASE OF INTRAGLANDULAR ENUCLEATION.

After ablation of the adenoma, a considerable oozing hæmorrhage takes place in the wound. The bleeding-points must be respectively seized with artery-forceps.



procedure the processes of crushing and ligature are carried out at a distance of several centimetres in front of the recurrent nerve, which remains in contact with the trachea behind the perithyroid cellular sheath. It now remains to treat the inferior pedicle of the isthmus. The pedunculation of the tumour is also inspired by the individual case. We have seen that, in cases in which the tumour occupies nearly the whole substance of the thyroid body, the method of instantaneous crushing enables us to preverse from a healthy cornu a thyroid lobule sufficient for prevention of cachexia strumipriva.

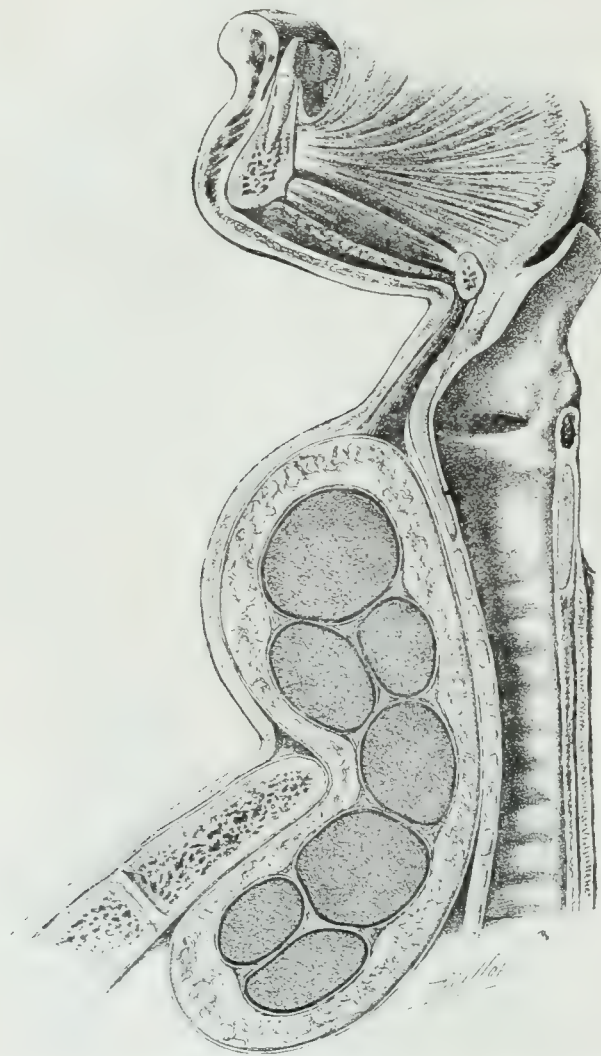


FIG. 17.—RETRO-STERNAL POLYCYSTIC GOITRE. DIAGRAMMATIC ANTERO-POSTERIOR SECTION.

## DISSECTION OF THE TRACHEA

The tumour is often strongly adherent to the trachea, to which it is fixed not only by the two lateral tracheo-thyroid ligaments, but also by adhesions to the median portion of the trachea. The lateral ligaments and the antetracheal adhesions should be divided with scissors; the section causes no hæmorrhage. It is also to apply a forceps and carry out ligation when necessary. Fig. 14 shows the crushing of a left thyroid pedicle after division of the right lateral ligament. dissection of the trachea. In this case the healthy left lobe has been left in its place.



FIG. 18. —RETRO-STERNAL POLYCYSTIC GOITRE: TAMPONING OF THE INFERIOR CAVITY, WHERE SOME OOZING HÆMORRHAGE MAY PERSIST.



## A PSYCHOLOGICAL ANALYSIS OF THE MORAL CONFLICT IN FUNCTIONAL NEUROSES

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When Dr. Jung, of Zurich, and those of the psycho-analytic school in general, embodied the results of their investigations in the neuroses, in the statement that a psychic conflict is the cause of every neurosis—although every conflict does not produce a neurosis—a definite bridge was built connecting the physical organism, and the disturbances, due, primarily, to the flesh, with the so-called physical realm—the realm of the soul.

It is only a few years ago, that when any one spoke of a moral conflict, the mind instantly reverted to some theological matter—a subject for the priest, but certainly not for the physician. This is not surprising, when we remember that the whole advance of medicine has been a steady preemption of the realms of mysticism and magic—a dragging of the occult into the daylight of the laboratory and operating room. Historically, it is not so long ago when all healing was a magic art, not a science, and when all therapy was in the hands of medicine men, priests, oracles and old women. The invasion of science into this field was a bold and daring task. The innovators, the experimenters, like Galileo, were considered sacrilegious, and so strongly was the church intrenched, that science, until our day, contented itself with the body, and considered that the soul must be left to religion. This split is a result of that ancient dualism which divided man into two parts, the material and the spiritual. Science must not meddle with the spiritual—its realm was the physical organism.

To-day, however, we know that the human being cannot be halved in this simple and superstitious fashion. He is a complex aggregate—a psycho-physical unit, and to gain a real understanding of the human being, science must deal with the entire man.

Indeed, it has been the advance of science itself which necessitated this enlargement of the field of the physician, for through the growth of science, the religious beliefs and the practices of magic have been largely disintegrated. A deep human need was thus left without any adequate means of help, and there sprang up divers kinds of pseudo-religious scientific attempts to meet it. The existence of Christian Science, New Thought, and allied cults, all basing their claim for practical recognition on their ability to cure disease, are convincing proof of the widespread need of humanity.

There has been, and still is, so much confusion among the regular psychologists themselves as to the respective claims of subjective and objective phenomena, and the modes of enquiry and study, and the physiological interpretation of the mental states, that when a rank outsider like Freudian psychology, taking no account of either the regular school psychologists or the physiologists, intrudes itself into this confusion, it is natural that it should be regarded as a common enemy, and be attacked by both parties.

Pursuing a purely psychological path for a definite end, the understanding of the significance of human behavior for therapeutic purposes, psycho-analysis has no quarrel or dispute with physiological psychology. Mental and physical activity are two inseparable aspects of a definite series of events, and for a complete understanding of the organism need to be studied equally.

One may say with Dearborn, that experimental physiology, and even one's own personal experience, prove that the nutritional and sympathetic influences from viscera affect the general sense of well being markedly, and there seems little doubt that the different autonomic nerve-currents play a considerable part in the origin of moods and passions—indeed, with all the basic affective themes that underlie consciousness and behavior.

Sherrington and Cannon, however, who have done so much experimental work, do not claim a priority for the visceral influences. Indeed, the former states that, "we are forced back toward the likelihood that the visceral expression of emotion is secondary to the cerebral action occurring with the psychical state."

Dr. Cannon has directed much effort towards an attempt to differentiate emotions on the basis of their visceral components, but only gives a negative answer so far, because, in his experiment he found the viscera implicated in ways which are similar, even when the emotions provoked are presumably quite divergent.

The chief question at issue seems to be, in general terms, whether there is an independent psychic state which precedes its physiological expression. The burden of determination seems to lie upon those who take a negative position, for those of us who give a large influence to the ideational element in the production of feeling and emotion, and thus to behavior, have much work in this realm alone, and, certainly, a large contribution for the immediate benefit of the individual.

Mind can be called a complex function, the dominant of the human organism, effected equally by physical processes alone, and by ideational stimuli. Freudian psychology deals entirely with the ideational aspect, the effect of ideas and concepts upon the instinctive and primitive desires of the organism, and has no desire to dispute, or deny, the effect of physiological processes upon the psyche.

We can say with Dr. Abbott, biologically speaking, that the continuous adaptations of the organism to its environment is the chief task of life, and that man is a biologic unit—reacting to his environment by means of internal self-directive activities, which determine his outer acts. Many of these internal activities are physiological, but most which result in his external behavior, or conduct, are psychological.

We can also say that man's efforts are not only directed towards adaptation to his environment, but also that of shaping and moulding environment to suit his needs and desires. This is the great distinction between man and other forms of life. He is in a continuous struggle with his environment, and his power of dominating and re-shaping it is very great.

The real aim of man is to gain satisfaction for his ego on the one hand, and for his love instinct on the other, and it is the thwarting, or non-fulfilment, of these desires which are in constant conflict with his environment and his moral development, that is the cause of a large portion of his sickness and misery.

The conception of the moral conflict in man, or the "struggle against temptation," as religion expressed it, is as old as man's thought, and to state its existence expresses nothing new. But to discover, and stand ready to prove both empirically and theoretically, that certain disorders of the human organism are but products of this conflict within the personality, the visible and outward manifestations of the struggle within, and lifted out of the religious and mystical setting, can be understood and dealt with by a definite psychologic procedure as surely as we can deal with organic desires, is an achievement worthy of the utmost consideration.

Thus, through the efforts of the physician, Sigmund Freud, and his followers, the science of medicine takes once and for all into its scope the entire human organism.

Lack of time prevents my presenting any complete exposition of Freud's conceptions, developed through years of patient research and experimentation, but a brief survey of his work, as well as that of two of his former pupils, Adler and Jung, who are both now working independently, is necessary for the development of my theme.

The great contribution of Freud is the technic of psycho-analysis, the key to the unlocking of the hidden wishes and desires within the human soul. Contained within this technic are the theories of repression and resistance, the transference mechanism, the infantile sexuality and the interpretation of dreams as a direct approach into the unconscious wherein lies the real origin of the conflict. This work of Freud led him to his conception of the sexual etiology of the neurosis, for, while he states that he does not ignore the fact that the ego also has claims, still his entire emphasis is placed on the sexual irregularities or inhibitions which are invariably found in every case. As is well known, the great opposition to Freud's theories was caused by this sexual con-



ception, and by his symbolic dream interpretation, which was subjected to the criticism of being arbitrary and forced. But it must be remembered that Freud did not give these symbols to dreams arbitrarily, but worked them out from the free associations of the dreamer, in connection with the folk symbology universally expressed in religions and myths.

Alfred Adler, one of Freud's original pupils, was the first secessionist from the teachings of his master. Freud's theory made the sexual strivings the central motif of the life, and this non-fulfilment the cause of all the neuroses. He has no special interest in the strivings of the ego, stating that psycho-analysis had a greater interest in showing that all ego strivings are admixed with libidinous feeling components. Adler's theory, on the contrary, emphasises the other side, namely, that all libidinous feeling contains an admixture of egotism—and then places the emphasis in favor of the ego component, instead of the libidinous. Thus, although Adler concedes that the psychologic conflict is the basis of the neurosis, and uses the same technic, including dream analysis, uncovering the same material, he makes a different interpretation, claiming that the assertion of the ego is the major factor.

The Adlerian central theme is the "will-to-power," in the form of the "masculine protest," which manifests itself domineeringly in the conduct of life, in character formation, and in the neuroses. He has attempted to work out his theory on the hypothesis of the weakness, or physical inferiority, of certain organs of the body which the organism in toto is making a continuous effort to over-compensate, both through physical and psychic mechanisms—the sense of psychic inferiority caused by this is being continuously opposed by a definite struggle for superiority. This striving for superiority, which Adler sees as the main motive for the life as well as for the neuroses, he calls the "will-to-power," deriving the term from Nietzsche, whose whole philosophy is based on the theory that the major motivation of life lies in the desire or instinct for power. Man desires to be a super-man: in that lies the secret of all his painful effort, his arduous adaptation, his progress from the animal up.

Carl Jung, of Zurich, also one of the early pupils of Freud, and the one person who perhaps more than any other helped and furthered Freud's recognition, made his first open defection in 1912, when he took exception to Freud's wholly sexual theory, and introduced some modification in the same. Unlike Adler, he does not throw out the sexual, or love motif, but sees it as one of the important factors in the etiology, which must be given its place, but does not consider it the exclusive cause of the neurosis.

The development of his libido theory, in which he gives an entirely different meaning to the concept than does Freud, is the attempt to express his empirical findings theoretically. Instead of using libido to mean merely sexual hunger, or strivings, he conceives this libido as a hypothetical energy of life analogous to the conception of energy in physics, and which can be studied only through its manifestations, but cannot be described. It first appears in the act of suckling and nutrition, and is occupied in the growth of the child and in the development of its various functions which are successively awakened—one of these being the sexual function. In the beginning, it is largely undifferentiated, but later becomes differentiated. It is the proper and normal application of this libido, either instinctively achieved, or consciously acquired, through psychoanalytic education that constitutes a healthy psychical state. Besides this, although the fact of infantile sexuality is accepted, instead of this factor being the cause per se of all the neuroses, Jung sees this infantile sexuality itself as one of the symptoms of the immature and only partially developed personality. In other words, the development of man's personality is looked upon as being due to factors other than the sole one of his sexual organism, although this plays a large part—much larger than is generally supposed.

Perhaps Dr. Jung's most important contribution for the understanding of human personality however, is the differentiation and study of the psychologic types. The advantage of the classification of mankind into distinct psychologic types, whose reactions to stimuli are different and distinct and can fairly adequately be postulated in advance, is as valuable for the medical psychologist as is Dr. Joel Goldthwaite's anatomical and physiological classification for the internist.

To be sure, William James referred to two distinct mental types when he spoke of the tough-minded and the tender-minded persons; and the age-old disputes between various schools of

romanticists, and classicists, all dealt with the same problem. But, until the present time, the importance of thoroughly recognising these types and their distinctive reactions has never been properly understood, for in no other way as yet devised can any real understanding of human personality be gained.

Jung deals for the time being with the two very distinct and definite types which are most easily recognized and are everywhere in evidence, and these he calls the extraverted and the introverted. He does not deny that there are probably other types not yet clearly defined, but from my own rather large experience I am inclined to believe that these are only variations of these two main types. These can be conceived of as being at opposite poles, and between them the less pronounced individuals, who lean, however, definitely toward the one or the other type, until the middle is reached, when if there is another type, this would be its place and it would partake of the nature of both introvert and extravert.

Extra—————Intro———  
Intuitive

The two main types are characterised by absolutely opposite reactions, and are in marked contrast to each other. The one called by Jung extravert is chiefly recognised by responding to stimuli with action. He feels his way as it were into the situation and identifies himself with the object, so that the ego and the object become one. This is the so-called man of action. His thought function is ordinarily less developed and is inferior to his feeling, which is frequently so finely differentiated as to enable him to handle difficult situations and meet practical problems of life in a highly successful way, and this often passes for intellectual acumen. He is frequently referred to as the person who acts first and thinks afterwards. Exactly contrary is the reaction of the introvert. He reacts to stimuli by thinking, and tends to withdraw from the object to think it over and weigh matters. For him action is difficult, uncertain, and delayed. He cannot make an immediate and direct contact with the object, because between his feeling and the object is the ego. An extreme example of this type is Hamlet, "all sicklied o'er with the pale cast of thought." He broods, meditates and is often moody.

If the introvert has had an intellectual training and development, he substitutes for his difficulty in activity and quick adjustment to the changing conditions of life, the creation of theories, philosophies and logical reasoning about things, and seeks to adapt himself mentally. His trouble comes in putting these ideas into action. This does not mean that he is without feeling. Indeed, he may have the strongest feelings—one class of introvert is often called the emotional type—but his feeling is undifferentiated, and he reveals an inadequate emotional reaction and valuation. His emotions, when aroused, frequently show an infantile character, so that it is not surprising to find highly-cultivated introverts acting in a childish and infantile manner with deep moods of depression, and a tendency towards infantile sexual manifestations.

The introvert is also affected by a feeling of inferiority, which is so unbearable that there is developed a mechanism which is constantly striving to overcome this by an over-accentuation of the ego—the power system—Adler's masculine protest.

The extravert, however, has not these same difficulties. Our modern world, with its accent on action and results, was made for him. He responds to stimuli, to people and events with finely differentiated feeling, and is more or less at home in the tumult and struggle of the world. He is preeminently the natural fighting man. His difficulty, however, lies in his thinking. When this is required of him instead of action, it is disclosed as of an undeveloped character—conventional and collective in type.

There are two individuals prominent in public life who represent these types most perfectly, and they are sure to make this subject clearer. These are President Wilson, and ex-President Roosevelt. Roosevelt is obviously the extravert of rather an extreme type—highly successful in action, with responsive feelings and a keen sense of events and situations; a man who can pick men; a man who makes warm friends and strong enemies, and who sways people by his emotional appeal. However, if his thought is examined, it will be found to follow action rather than precede it. It is conventional and lacking in originality, is usually made over



from the ideas and thoughts of others, and he can quickly reverse himself when the occasion demands. President Wilson, on the other hand, is an introvert. He is a student and thinker, slow to action, with a policy called watchful waiting; that is, of thinking well over a matter before acting; of trying to understand all the causes and processes of problems. He can construct a political philosophy, or build up a religious international vision for the world. He refers to himself as having a single-track mind, meaning that having once thought out a path of action, he must unswervingly follow it, no matter what new situations may arise demanding a reversal or quick adaptation. His weakness lies in the realm of feeling and action. He has often, it would seem, been mistaken in his judgment of men; and in the field of action his retardation has frequently brought forth criticism from his most ardent admirers.

In another way, one may say briefly that the extravert puts the accent on the object, and the introvert on the ego or subject. The extraverts feel out and acts. He is the opportunist, feeling his way, and acting according to the demand of the moment. The introvert thinks in and about as it were, able to act effectively only after a fully worked-out line of procedure, in which the subject is first and the object second. This is the reason that it is so much more difficult to treat the neurosis in the introvert than in the extravert. The latter attaches himself to the object in order to assist and enhance the ego or subject, and can only with great difficulty relinquish his hold once made, instead of adapting himself to the object with the ability quickly to change and make a new identification once the need arises.

It is in dealing with the neurosis of the introvert that one realises the very great part played by the ego-dominant, the "will-to-power," and that recognition must be given to this component in any adequate analytic therapy. It is through this recognition of types that Jung was enabled to reconcile the very opposite conceptions of Freud and Adler. Freud's sexual theory applies more particularly to the extravert, and Adler's power theory to the introvert. To be sure this in no wise means that sexuality is not everywhere to be found, and must adequately be met, but simply that the emphasis in one type is on the ego, and in the other on the sexual.

The introvert can far more successfully repress his sexuality, and be freer of its claims in consciousness than the extravert; and, instead of struggling with the sexual problem as the central theme, his struggle is with the feeling of inferiority, which is an almost constant accompaniment of this type, and with his over sensitiveness, which is concomitant with the intense ego demand. The important factor in the recognition of these psychological types is to realize that they can never, under normal conditions, be changed to the opposite types, any more than can the physiological types be altered. Therefore, admonitions and advice to do, or be otherwise, is futile, and this explains why, in the psycho-neurosis, a given line of treatment is successful with one patient and fails utterly with another. The individuals are unable to respond except according to their own mechanism.

It is, therefore, most necessary that in the reductive process of analytic treatment an important place be given to the ego strivings as well as to the sexual components of the personality, and that the formula or psychic mechanism of the individual be thoroughly grasped. For there is a very definite unconscious mechanism governing the type of reaction and behavior of the individual, and to make this conscious is the first step in aiding him to find a more satisfactory mode than the primitive and instinctive one which governs him.

The moral conflict which so frequently lies beneath the neuroses, to be understood and met adequately, must be considered in relation to the type of individual and his psychic mechanism, for in no other way can his particular problem be satisfactorily solved. I shall attempt to elucidate this statement by citing two cases, suffering from similar symptoms, but presenting a very different history and mechanism.

Both came under observation because of what is called a nervous breakdown. The usual aggregation of symptoms is well known—fatigue, loss of weight, and appetite, inability to concentrate on ordinary duties, insomnia, gastric disturbance, tremor, depression, loss of self-confidence, marked emotionalism, and a general sense of weakness and failure.

Both patients had been treated along physiological lines, and sent away to recuperate for several months. Both returned complaining that they were not improved, and presented themselves for analytic treatment.

Following is the story of Mr. B.:

Onset of present condition nine months previously, just following a change of position to a more important and larger opportunity and a correspondingly greater responsibility. Fear that he could not make good in this position; that it was more than he was capable of handling, with gradual inability to concentrate his mind upon his work, a constant feeling of his incapacity. Besides this, a severe demand was made upon him professionally, continually forcing him to work hard, and in his hesitant, uncertain state, actually caused him to fall behind in his output, and seemed to be the immediate cause of the present illness. This is the condition spoken of so commonly as a breakdown from overwork, an attempt to handle a proposition too large for one, etc. That this was true, only because the major part of his energy and power (*libido*, if you please) was repressed and occupied in his psychic conflicts, this leaving only a small portion free to be applied constructively, I shall endeavour to show. The history much condensed follows:

This picture, as drawn by the patient, very beautifully presents the condition, and immediately one will recognise the introvert and his particular reactions. That the sexual element is here in full bloom is unquestioned. However, the condition is not cause, but effect, and without a consideration of the ego problem there certainly could have been no adequate rehabilitation of this personality. We see here the whole life spent under the shadow of the dominating personality of the father, and from every situation in which it was incumbent upon the patient to act responsibly and adult, he recoils, and acts the part of the inferior child. He cannot put himself on a plane of equality with the father—and all things which demand an adult attitude, of aggressive handling, are identified with the father. His partners, before whom he shrank, and whom he imagined were critical and dissatisfied with him, were really only surrogates for the father. He remains fixed in this childish bond to the mother, and this inability adequately to manage the demands upon him, produced a great conflict between the unconscious childish attitude and the conscious ego. He often expressed his feelings as similar to that of a man in chains, struggling futilely and wildly to free himself, and falling down exhausted.

The father, in the patient's childhood, stood for stern reality—a symbol of what he himself must attain, a dominating power—who would separate him from the mother to whom he must cling fast, and, therefore, an enemy whom he feared and hated. This is called the incest problem by Freud, but Jung sees this condition of infantile continuity with the mother, the primary union, which has never fully been dissolved into subject and object as the actual cause of the inability to meet life adequately, and as the cause of the repression and inhibition of the sexual impulse. Instead of the regressive longing backward, which renders adaptation so difficult, being merely the incestuous desire for the mother, it is the longing for the state of infancy when the child was enfolded, protected and loved, and had no necessity for activity on his part to obtain his satisfactions. This is the condition which the neurotic introvert can never completely renounce, and, in the case just presented, the entire life presents the wish to remain in the passive state. When confronted with the necessity of a new adaptation, or responsibility, there was repeated the same mechanism of revolt, resistance and paralysis as overcame the child in the presence of his father. All introverts have in common the feeling of inferiority, certain inverted, feminine or masculine, characteristics, according to the sex. Auto-erotism, latent homosexual tendencies, frequently unconscious, and a marked desire to be loved as the child, or its opposite, to give love as a parent, and at the same time exercise power and authority.

These latter attitudes are frequently combined in the same person, who then alternates continuously between the child, or inferior, and parent, or superior, roles, and whose life is a constant struggle and revolt against the inferior child attitude, with the replacement of this by the superior, egoistic attitude. This soon breaks down, and the childish attitude reappears, only to be again overcome; and this mechanism is the affective influence dominating the life. My patients often describe the feeling, in homely language, as a painful sense of being under, with a strong desire to be over, or on top. It is this feeling that Adler designates the masculine protest, or will-to-power, and to account for which he offers the theory of organ inferiority. All that is possible to say about this attempted physiological explanation of the phenomenon of inferiority, is that the evidence presented is far from conclusive, and no further corroboration has been



offered. Jung, moving wholly in the realm of psychology, postulates the condition as the persistence of a psychic continuity of the child with the mother, the primary object to which the child is actually attached physiologically, through the umbilical cord, as well as through his complete physical dependence upon the mother during the early years. This primary attachment is never severed psychically, and this persistence of the infantile attitude creates a feeling of inferiority.

In great contrast to this case of an introvert is the case of Mrs. C., an extravert. This lady aged forty years, was a most capable personality. She had successfully managed a large enterprise, had supported and cared for two children, and had well adapted to the demands and responsibilities of life. Yet she now presents the same group of symptoms as the first case, with the exception that these feelings of inadequacy and helplessness are now all new and unfamiliar phenomena, with which the individual had no previous acquaintance, whereas in the first case the symptom-complex was but an exaggeration of that which had been more or less in evidence during the entire life. One case presents that of the actual neurotic, and the other that of the acquired neurosis. The history reveals the following:

Mrs. C., aged forty, twice married, two children.

First husband died after seven years of rather unhappy marriage, before which time a partial separation occurred, because of the husband's ungovernable temper. She adds that she ceased to love him after a few years because his ideals and standards were much different from those in which she had been trained.

After this she went back to her father's house, taking the children, and soon learned to put her energies to work and forget her unhappy marriage.

Past history.

As a child patient was bright and happy, full of ambition. Never had any illness. Was one of six children, all of whom are living and well. Father and mother both alive and well. She speaks somewhat enthusiastically about the father being a superior man, intellectually very able, and whom she admired very much. Her mother she refers to as a much lesser person. Questioned as to whether she was her father's favorite, she rather unwillingly states that this had been her great ambition as a child. That she had spent endless effort in trying to please him, to attract his attention to her, to adapt herself to his tastes as she imagined, but he really treated her unkindly, hardly ever giving her the ordinary need of praise when she excelled in her school tasks, or performed some particularly considerate act or effort to please him. In this discussion she showed considerable emotion, wept as she spoke of the father, and his unkindness to her, and, in considerable detail, told of the misery the entire family had suffered through him; how her mother had supported them all, and the father had lived in idleness, exercising a domination over them all by virtue of his bad temper, self-important attitude, and superior manner. After relating many incidents, which revealed the father as an overbearing, lazy egoist, a very inferior character of the introverted type, I asked the lady how she could reconcile these attitudes and characteristics with her statement, made in the beginning, that her father was a remarkable and superior person. She was much disturbed at this question, and admitted that she couldn't understand it herself, that she was very unhappy over it, and had spent much time puzzling over these contradictory ideas.

The father became increasingly difficult, and, finally, he was made to leave home and the family, under pretext of his health, and live in a distant state.

When the patient was sixteen years old, she met a man much older than herself, who seemed to her quite superior, evidently an introvert, and who, from the description she gave, seemed to possess many of the characteristics she mentioned as belonging to her father. This man she adored, and although he only gave her scant consideration, that was enough to hold her devotion for six years, when he finally married her. She had three children within five years, but the births were normal, and nothing special marked her physical life. This marriage was not a great success, on account of her husband's losing caste in her eyes through his various weaknesses, and the gradual change of her love to active antagonism, which finally ended with his death as a happy solution.

She remained a widow for five years when she again married, this time a man slightly younger than herself—also an introverted personality, although this time of a very quiet, unemotional and passive type. She had known this man for several years; he had been devoted to her since her husband's death, and the marriage was a "natural thing."

However, in a very few months, she realised that there was something wrong here. He was exaggeratedly sensitive, would pass into moods of depression over apparent nothings and was not able to show her any warmth of affection.

As can be anticipated, he was not very virile, and was sexually unsatisfactory. All this reacted upon her, causing her to throw herself into her work more intensely, because there she could forget her great disappointment over this second marital failure, and cease to criticise herself of the mess, as she called it, of her life.

Two years previously she had what was called a partial nervous prostration, but was helped by changed environment and the usual tonic treatment. The conditions of her life remained the same, however, and she had gained no insight into the dominate power affecting her, therefore, two years after she suffered a very serious collapse, and it was this breakdown that brought her under my care.

This history at once reveals to those familiar with the Freudian psychology the typical electra, or so-called father complex, and is the kind of case which forced Freud to develop his sexual theory of the neuroses.

This lady was not a neurotic personality, but a mature, capable person in her dealings with the outer world, and she was able to postpone the development of her neurosis many years, because she was able to lose herself in the object occupying her, and, by her energetic activities, forget the personal needs. She gained ego satisfaction through her achievements and business success, and it was only the too intense application of libido to this object and her unsatisfied libido sexualis which precipitated the breakdown. The fixation on the father in this case was so strong that she had never been able to relinquish her longing for him and desire to win him. To this end it was found that many characteristics and traits which she exhibited, and which seemed incongruous with her type of personality, were only assumed, taken over from the father in her efforts from childhood to please him. Her great efforts for success really had the motive of forcing her father to be proud of her and to gain superiority in order to meet him. Her two marriages represented her efforts to free herself from the father, but were futile because she only chose men who were surrogates for the father and had many traits similar and equally difficult to deal with, or gain any satisfaction from. The love life was unfulfilled and a continuous disappointment, for she had never relinquished her primary wish to be the wife of the father. This wish had guided her in the choice of both husbands, and had affected her conduct with them so that instead of acting the same adult role that she was able to exhibit in the face of the real world, she fell back into the same over-anxious, childish attitude which she had displayed to the father. When she recognized the nature of her desire for the father, the unconscious incestuous wish, and the consequent inability to act fully mature in the love relation because of the repression of sexuality before the incest barrier, the real release from the compulsion could be effected and a rounding out of her personality be achieved. It is certain she will never again suffer from a nervous breakdown.

The contrast between these two types of personality and the differences in mechanism are very definite, and clearly illustrate both the ego inferiority and the sexual basis of the neuroses.

The moral conflict in the case, of the lady was more definitely repressed than in the first case, where the weaknesses and shortcomings so out of accord with the patient's ideals of what constituted manly conduct, were painfully released. In such a case it is necessary to ease the pain and depression caused by the conflict by using the analytic understanding of the condition to lessen the burden of the personality.

To find that he is understood, and not scorned, is a tremendous relief to the introverted patient, and is the first step towards the rehabilitation of the personality.

An opposite situation is found in the extraverted type, as a rule, and is clearly shown in the case of Mrs. C. She has no idea that the cause of her sickness lies in her own soul—it is because



she has worked too hard, her husband had failed her; in other words, the external conditions of life are the cause of her trouble. The moral conflict in this instance is repressed, and the patient has no idea of the nature of the wishes which play the part of fate in the life.

One has to proceed very carefully in such a case to reverse the unsuspected weaknesses and desires so contrary to the conscious thoughts and ethics of the personality, that only with difficulty and pain can they be released from the repression. The resistance to be overcome in these cases is usually very great, for the whole life has proceeded on the mechanism of forgetting the unpleasant and living in action rather than thought.

I do not mean to infer here that the mechanisms of repression and resistance are not equally active in the introvert, but, as he is usually more of the thinker than the doer, he develops what is called the logic tight compartment type of mind, in which the complex is rigidly separated from the rest of the personality, and proceeds on its independent way, manifesting itself in the inadequate conduct and action, which is so at variance with the theories and mental claims of the individual.

Indeed, we have an example at present of a nation whose conduct can only be understood if we apply the technic of analytic psychology. Germany is an introvert. And it is comparatively a short time ago when one of her own greatest statesmen spoke of her scornfully as a nation of philosophers, dreamers, and poets. Now, in a brief space of time, the rest of the world stands aghast at her conduct, unable to understand her except as a deliberate hypocrite, and outside the pale of humanity. She is equally unable to understand the other nations, deized by the scorn and hatred she has evoked, she regards them as merely leagued together to destroy her. She is unable to understand that her conduct is different from the rest whom she sees equally interested in the practical aims of life; she only thinks she is more thorough and efficient. This she certainly is, but she has no understanding that man does not live by logic alone, and that even though the aims or purposes may be similar, the important factor is the means by which the purposes are achieved, and that the ignoring and ruthless disregard of all those humanities which mankind has so painfully acquired cannot be tolerated.

It is a very significant fact that although analytic psychology and its development arose from the German mind, it is Germany who has opposed its teachings most violently, and where it has had its hardest struggle for recognition. To accept and understand the revelations of this work would mean that Germany would be self-revealed, her marked inferiority complex be exposed to view, and the mechanisms by which she has attempted to overcome it become clear. Too much struggle and effort has been put into this achievement, and, therefore, the mechanisms of repression and resistance are shown operating in their intensest form.

**FRACTURES OF THE NECK OF THE FEMUR**

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Fractures of the neck of the femur are the most disabling to the elderly, and constitute one-third of all the fractures in people more than seventy years of age. There has been handed down to us one hundred years of tradition, due to the teachings of Sir Astley Cooper, that bony union is a rarity following such a fracture, and that treatment, particularly of the subcapital or so-called intracapsular fracture, is well nigh hopeless. Such teaching has produced, to say the least, a cursory type of treatment, with disastrous results. Occurring, as such fractures often do, in old age, many persons end their days in pain and suffering when they might have had days of comfort and peace. While it is my intention to discuss here chiefly the treatment of ununited fractures, the difficulties and disappointments encountered prompt me to emphasise the necessity of their adequate primary care.

The current medical literature of recent years has, from time to time, contained excellent papers calling attention to the success that may be expected to follow treatment based on a sound pathologic knowledge of the fracture under discussion. Because in isolated instances elderly persons have died following fractures of the hip, an exaggerated view of the mortality rate has been held. Whitman cites statistics from Bellevue Hospital, New York, showing that in 241 consecutive cases treated in three years there were but three deaths, one within twenty-four hours, which may have been due to fat embolism, and two due to alcoholism and nephritis. These figures show that as a group, such patients are entitled to active treatment, instead of the "let alone" method which is almost sure to give poor results.

Fractures of the hip may be produced by muscular action or some slight jar or jolt, such as slipping off a curb or a low step. Fractures happening in this manner are found in the aged, although occasionally seen as the first manifestation of a Charcot joint in young persons. Close questioning in the latter cases may be necessary to elicit the information that the hip seemed to give way, causing the fall, that is, the fall was caused by the break and not the break by the fall. The majority of fractures of the hip are, however, produced by direct violence, usually by a fall on the trochanter.

As a basis for this communication 165 consecutive case histories of patients coming to the Mayo Clinic for fracture of the neck of the femur have been studied. There were sixty-six females and ninety-nine males. The ages of the patients at the time of accident varied and showed that the condition is by no means confined to the elderly. There were eleven between 10 and 20 years, eighteen between 20 and 30, twenty-seven between 30 and 40, twenty-six between 40 and 50, fifty-one between 50 and 60, twenty-four between 60 and 70, five between 70 and 80, three between 80 and 90. A large majority of the series had old, ununited fractures; the patient coming for treatment three or four months or as many years after the accident. The number emphasises in general either that the treatment of fractures of the hip is very poor or that the condition is a very difficult one to treat. Because of the great length of time that had elapsed between the accident and our examination, it was impossible to determine whether the type of fracture was originally subcapital (intracapsular) or trochanteric (extracapsular). The impression was gained, however, that it is not alone the subcapital type in which there is non-union. If it is true that a fall from a height on the feet produces a fracture of the neck of the femur of the subcapital type, and that an injury in which the force is applied directly to the trochanter, as in a fall on the hip, produces a trochanteric type of fracture, then many of these cases of non-union must have followed the trochanteric type of fracture. After the accident, there is pain and dis-

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\*Read Before the Ontario Medical Association, Mamlton, May 1918.



ability, usually total, shortening and eversion, and the trochanter and upper part of the femur sag to a more posterior plane than the same region of the opposite leg. The problem the surgeon is confronted with is to re-establish normal length, correct the eversion and raise the trochanter forward, and once these conditions are fulfilled, to hold the corrected position. It is the last requirement which has brought out the different methods of treatment.

Brief mention will be made of four methods any one of which, properly carried out, will give good results in fractures of the neck of the femur, be the fracture subcapital (intracapsular) or trochanteric (extracapsular). One hundred per cent. good results cannot be expected, since no surgical procedure gives such a percentage, but the cases show that very much better results can be obtained by these methods than by any other.

The outstanding features of a review of our case histories were that in a great many instances the diagnosis was not made until too late for efficient primary measures, and that even when the diagnosis was correctly made, the treatment accorded as a whole was woefully inefficient. Many had no treatment at all, a diagnosis never having been made. Following the accident there may have been a weak impaction disguising the symptoms; repeated examinations were not made subsequent to a diagnosis of sprain; the impaction broke down and only when too late did the examination, most often by another physician, disclose the typical signs of fracture of the hip.

In all our textbooks runs the warning against breaking up a so-called impacted fracture, and perhaps no one rule has done more to cause many poor results. Once the term impacted is applied to the case, it gives all concerned a sense of unjustified security. It is most difficult to tell whether a fracture of the neck of the femur is securely impacted. Whitman describes this very well when he says, "What passes for impaction is usually a fracture with but slight displacement; clinically a case in which shortening is slight, in which crepitus is absent and in which some control of motion or even capacity for weight bearing is retained." It is best in every case that the impaction should be broken up, and this is advised by such authorities as Jones, Whitman and Ruth.

In 1869 Dr. Philip of Dixon, Illinois, first used what is now known as the Ruth-Maxwell method. Dr. Maxwell advocated it and following him, Dr. C. E. Ruth, both preferring to call it the anatomical method. Ruth advises, as the first step in the treatment, flexing the thigh, thus permitting disengagement of the fractured surfaces. The leg should then be forcibly straightened, the traction being persistent, strong and steady until the normal length is secured. The eversion should be corrected and the trochanter forced up to its proper place, when a Buck's extension should be applied with a weight of twenty pounds for the ordinary individual. A

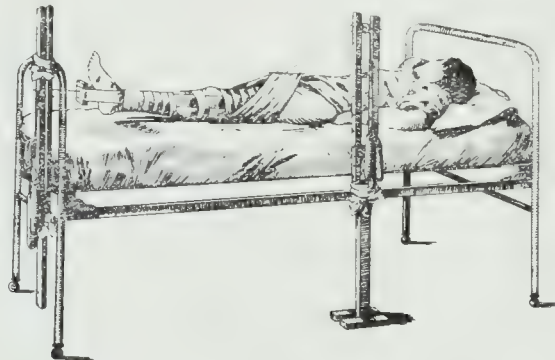


FIG. 1

binder's board or fibre should be moulded to the inner and upper side of the thigh over which a band of muslin four to six inches wide should be passed outward, slightly upward and sufficiently forward so that the weight of this counter-extension overcomes the internal pull of all the rotators and abductors, and at the same time raises the lower fragment to its normal level. This weight varies from five to fifteen pounds. If in addition this method is further modified so that

the leg is kept in abduction, better coaptation of the fragments is insured. Whitman states that Ruth has modified his treatment in this manner, thus accepting the position of abduction as an aid to the treatment.

The method advocated by Whitman is based on the fact that if a fresh fracture of the neck of the femur is reduced and the limb placed in the normal position, re-establishing length and overcoming the external rotation and backward displacement of the trochanter, the fractured surfaces may very readily be held in this relation by abducting the hip to an angle of approximately 45°.

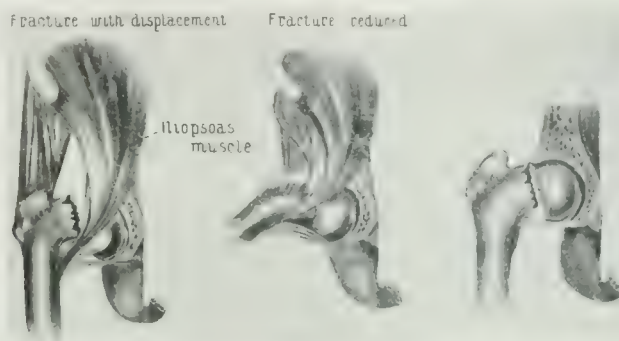


FIG. 2

This is the extreme abduction normally permitted, and it forcibly impacts the fractured surface of the neck against the fractured surface of the head of the femur. The exact method, according to Whitman, is as follows: "The patient having been anæsthetised, is lifted to a sacral support, the shoulders resting on a box of equal height while the extended limbs are supported by two assistants. The assistant holding the sound limb, then abducts it to the anatomical limit to illustrate the normal range, which varies in different individuals and at different ages, and, incidentally, to fix the pelvis by direct bony contact. The operator first flexes the thigh of the affected leg to disengage the fragments. The assistant then extends the limb and by manual traction overcomes the shortening, as demonstrated by the relation of the trochanter to Nelaton's line and by measurements. He then rotates it inward, and, under traction, abducts it to the normal limit, the operator meanwhile lifting the thigh and trochanter from beneath. Inspection should now show absolute correspondence between the extended limbs as to abduction, rotation, length and position of the trochanter. In this attitude the injured part is securely fixed by a plaster spica extending from the nipples to the toes." Patients treated in this manner may readily be moved and their position in bed altered, as the extreme abduction absolutely prohibits any motion of the fragments and does not permit joint fluid to find its way between the surfaces.

Cotton in his method uses practically the same procedure, except that after he has broken down the impaction and reduced the fracture, he aims to firmly impact the fragments with the leg in abduction by hammering on the trochanter with a padded mallet driving the outer fragment into the inner. With this accomplished, he uses a plaster of Paris cast to hold the position.

Sir Robert Jones applies the same anatomical principles, but uses his abduction frame to control the fragments. In his skilled hands it is an excellent fixative apparatus, but attention is necessary to see that no kind-hearted but meddlesome attendant loosens a strap or changes the position of the patient in the attempt to make him more comfortable, so that fixation is altered and mischief done. Following such treatment it is necessary to maintain fixation of the fractured surfaces for three months, and not to permit any weight-bearing for six months. These methods may be considered as conservative surgical measures, and the cases reported by their originators show that bony union with normal functioning limbs can be obtained. In skilled hands and with careful technic there can be no doubt that an open operation and the placing of an autogenous or heterogenous bone peg through the trochanter and neck into the head of the femur, followed by adequate fixation, would give excellent results, but the results in fresh fractures are so good by the former methods that more radical procedure is not necessary. Figs. 4a-4b.



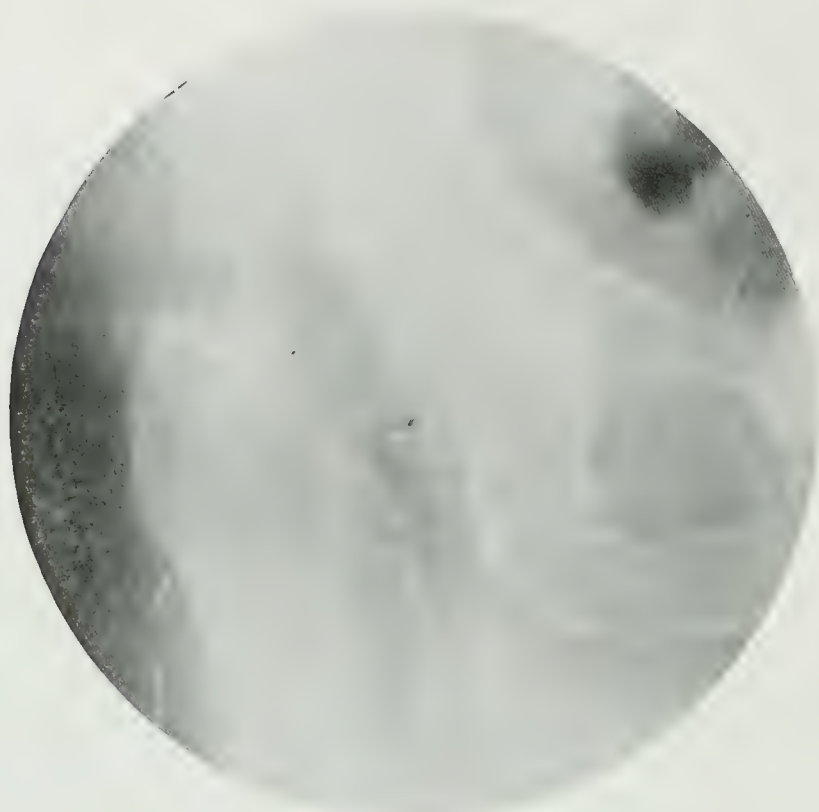


FIG. 3 a



FIG. 3 b

In the large number of patients with ununited fractures of the hip observed in the Mayo Clinic, radical surgery has been resorted to in thirty-three. The ages of those operated on were as follows: One between 10 and 20 years, three between 21 and 30, nine between 31 and



FIG. 4a

40, seven between 41 and 50, eleven between 51 and 60, and two between 61 and 70. Nine were females and twenty-four were males. There were no deaths. The number is too small to draw conclusions satisfactorily from any statistics that might be compiled, therefore the present report can only be of value by somewhat arbitrarily stating conclusions based on clinical observations. Various measures were adopted. In a number of cases nails and screws were used. The attempt to place these without exposing and freshening the fractured surfaces practically means failure, and was early abandoned, and even after freshening the surfaces the final results were poor. The last seventeen patients were subjected to some form of bone grafting. The bone peg has been employed in four ways. Fig. 5 a.b.c.





FIG. 4b



FIG. 5a



FIG. 5 b



FIG. 5 c



1. As an autogenous peg taken from the patient's tibia on the affected limb, and, after freshening the fractured surfaces, placed through the trochanter and what was left of the neck into the head of the bone.

2. As smaller autogenous grafts wedged in between the fractured surfaces. A piece of bone five or six inches in length removed from the tibia was sawed into three pieces which were placed either vertically or horizontally between the fractured surfaces and wedged firmly between the fragments by placing the limb in abduction. It was hoped in this manner to restore at least some of the absorbed neck of the bone.

3. As heterogenous bone pegs obtained by taking the femur of the beef and turning out on the lathe threaded pegs of suitable size.

4. The fibula used, according to the advice of Davison, as a peg.

In nine cases in which the bone graft was tibial and autogenous, used either as a large peg or as multiple small grafts, there were but two successes. At first it was thought that failure was due to inadequate fixation in that it was not prolonged enough, but even after three months' fixation the peg broke, and most of the pegs broke while the case was still being worn. Fig. 6, a & b. In no case was there any evidence shown in the Roentgenogram that the graft increased in size to take on function. On the contrary, the graft atrophied and broke where it bridged the fracture line. As these grafts were all cortical bone, and were placed in cancellus bone, we believed that they were gradually replaced by bone natural to the situation, and that in this process of substitution the pull of the powerful muscles on the lower fragment, even when in a cast, was sufficient to break the weakened graft where it crossed the fracture line. We have used the fibula in six cases with three successes. It has advantages over the other grafts in that it is large, strong, and has the full thickness of bone. The entire thickness of the fibula of the desired length is removed, usually at the juncture of the lower with the middle third. The removal is done subperiosteally as much as possible, and before the bone is used as a peg, the remaining



FIG. 6 a



FIG. 6 b

muscle tags and periosteum are removed. The bony defect in the fibula does not completely regenerate, but causes no inconvenience to the patient, and function is perfect. The beef peg has been used four times with two successes, but it is only fair to state that these two were especially favourable cases for operation, and bony union probably would have resulted without the operation although not so rapidly. From our experience we are inclined to discard the use of such a peg in old ununited fractures, particularly in elderly persons. If operation is advised in a recent case or in a young person, a beef peg would be quite suitable.—Figs. 7a: b. c.

In our work we have used the approach advised by Murphy, that is, the curved incision over the trochanter with the broad base upward and the bottom of the **U** passing across the femur two inches below the tip of the trochanter. On reflecting this flap upward the tip of the trochanter with its attached muscles, is either sawed off with a gigli saw or chiseled free and also reflected upward. Ready approach to the neck of the femur is then secured. The fractured surfaces are exposed and freshened, and whatever means the surgeon prefers is used to hold them together.

The results of our efforts in these thirty-three cases were disappointing, there being seven successes and twenty-six failures. The operation step by step is not difficult but taken as a whole, consisting of the exposure, the freshening of the bony surfaces, the placing of the graft in such a way that it is at a mechanical advantage, the holding of the position while the wound is being closed and the fixation, usually plaster of Paris, is applied, devolves considerable difficulty on the surgeon, making the entire operation somewhat formidable. In some cases the failure was undoubtedly due to faulty technic, poor placing of the nails, screws or bone grafts; in others the fault probably lay in poor post-operative fixation.



FIG. 7a





FIG. 7 b



FIG. 7

While in the main our results were disappointing, we had some successes. It must be remembered that as a group these patients had nothing to look forward to but continued disability, and the attempt was justifiable. From the experience gained we could probably obtain better results in the next thirty-three cases. The selection of the cases for operation is most important. The more of the neck of the femur that is absorbed, the poorer the chance of obtaining bony union by surgical measures. The older the patient, other things being equal, the poorer the prognosis. An older patient might, however, offer better chances for surgery if more of the neck of the femur were present than would a young patient with no femoral neck. One of our patients, a young woman twenty-five years of age, in six months after the accident, showed complete absence of the neck of the femur, and the operation was of no benefit.

The poor showing of our surgical efforts in this group of ununited fractures of the hip serves but to emphasise most strongly the necessity for rational adequate therapeutics immediately following the fracture. If radical surgery must be attempted we would advise, as the result of our experience, that a bone graft, preferably the fibula, be used, though even this procedure is uncertain. Too much emphasis cannot be laid on the necessity of applying proper treatment immediately after the accident, thus not allowing the patient to go on to the most distressing condition of non-union.

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## MENTAL HYGIENE

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Eleven years ago the designation "Mental Hygiene" was used for the first time, and since the coining of the term much work has been done in this particular field of endeavor. Dr. Llewellys F. Barker has eloquently defined a campaign for mental hygiene as "a continuous effort directed toward conserving and improving the minds of people: in other words a systematic attempt to secure human brains so naturally endowed and so nurtured that people will think better, feel better, and act better than they do now."

In order that satisfactory results may come from a mental hygiene movement, facts must be collected concerning the number of people suffering from mental disorders, the relationship of these disorders to social problems, the nature of the disorders themselves, and, from the foregoing studies, a programme of treatment and prevention must be adopted.

Although the science of mental hygiene, if indeed it can be so designated, is in its infancy, nevertheless many important facts have been discovered. We know that insanity is more prevalent than most people had believed. In 1910, in the United States, there were more insane in hospitals than there were students in the colleges and universities of that country, the number exceeding two hundred thousand. The cost of caring for them was nearly \$33,000,000 a year. The economic loss due to their being unable to work was estimated at more than \$30,000,000 annually—the total cost of insanity being equal to the value of the combined annual export of wheat, corn, tobacco and dairy and beef products, nearly \$163,000,000—this according to Dr. Abbott of Belmont, Mass. In Ontario, in 1913, there were 6,931 patients in hospitals for the insane, and, if this represents the proportion to population cared for in other provinces, there were at least 20,000 insane in the whole of Canada. This number would represent an economic loss to the Dominion of not less than \$16,300,000 annually.

The number of feeble-minded in Canada has never been determined. In Toronto, with a population of 500,000, we have discovered 2,500 cases. Many more defectives reside in Toronto, but taking 2,500 as a conservative estimate, we have a rate of 5 per 1,000 inhabitants. On such a basis, and if this obtained for the rest of Canada, there are 36,000 mental defectives in the Dominion.

The relationship of mental disorders to various social problems has been studied in this country and abroad. Striking facts concerning the prevalence of mental abnormality among criminals are worth recounting. Dr. Bernard Gluck made a recent study of some 600 consecutive admissions to Sing Sing Prison. He found that two-thirds had already served one or more terms in prisons or reformatories prior to their present confinement. The chief reason for relapse or recidivism in these cases was due to mental or nervous abnormality. Fifty-nine per cent. of 608 prisoners examined were either insane, feeble-minded or psychopathic. According to Dr. Gluck's findings, 12% of the prisoners were insane, 28.1% intellectually defective, while 18.9% were psychopathic. Referring to the psychopathic delinquent, Dr. Gluck says that they constitute the most troublesome element in a penal institution. They are subject to outbreaks of pathological emotionalism and excitement, and cannot be given proper care in the average prison. Studies that have been made in the psychopathology of crime in Canada coincide with the findings of Sing Sing Prison. Dr. Gilmour, parole commissioner for Ontario, states that at least 33% of the prisoners in Ontario institutions are mentally abnormal. At the psychiatric clinic of the Toronto General Hospital 1,300 mental defectives referred by the Toronto Juvenile Court have been discovered in the last three years. These defective delinquents represent



about 40% of the total number of children who are guilty of repeated offences against the law in Toronto, and they have been charged with such grave offences as theft, arson, forgery, sexual immorality and attempted murder.

The study of prostitution from the psychiatric stand point demonstrates that between 50% and 75% of all the loose women of the streets are mentally abnormal. Dr. C. K. Clarke found, in one institution in Toronto—an institution that cares for girls of weak moral nature—that 90% of the hundred odd cases examined were either feeble-minded or insane.

Pauperism and unemployment are conditions wherein mental abnormality figures to a considerable degree. Dr. Herman Adler analysed 100 cases of unemployment who were received as patients in the Boston Psychopathic Hospital. Only males of from twenty-five to fifty-five years were included, and they were grouped as follows: (1) Paranoid personality—their own ego was always in the centre of the plot and dominated everything—43% of group; (2) inadequate personality—a lack of intelligence—35% belonged to this group; (3) emotionally unstable group—individuals who show excessive emotional reactions—comprising 22% of cases.

Whenever mental examinations have been made in public schools it has been found that 1% to 3% of the pupils were either feeble-minded or psychopathic. The presence of these abnormal children in the schools is always a source of educational inefficiency and moral contamination of normal children. As psychiatrist for the Department of Public Health of Toronto, I examined 10,000 school children and found 2% to be feeble-minded. In one school 100 normal children were guilty of gross sexual offences. The ringleaders in such practices were feeble-minded—a defective boy and girl.

Mental disorders in the fighting forces of our armies have received much attention of late. Dr. Thos. W. Salmon, in a recent article on the care and treatment of mental diseases and war neuroses in the British army, states that military life has well been called the “touch-stone of insanity” on account of the high prevalence of mental diseases in armies even during peace. The annual admission rate is about two per thousand among non-expeditionary troops, and about four per thousand among expeditionary troops. Mental disorders are responsible for not less than one-seventh of all discharges for disability from the British army, or one-third if discharges for wounds are excluded. Dr. Salmon points out that these diseases endanger the morale and discipline of troops. Sir John Collie, president of the Special Pension Board on Neurasthenics, made an analysis of 120,000 discharge certificates and found that the neuroses constituted 20% of those discharges. During the year ending April 30, 1918, approximately 1,300 officers and 10,000 men were admitted to the special hospitals for “shell shock” and neurasthenics in Great Britain. In the United States all recruits and drafted men are subjected to a mental examination, and over 12,000 have been rejected to date because of mental or nervous disability. Capt. C. B. Farrar, psychiatrist in the Canadian Army Medical Corps, stated last year that of the total number of soldiers invalided to Canada, the proportion of neuroses and mental cases has been fairly constant at 10%, classified as follows: (1) neurotic reactions, 58%; (2) mental diseases and defect, 16%; (3) head injuries, 14%; (4) anæsthesia, 8%; (5) organic diseases of central nervous system, 4%.

Having cited a few facts concerning the prevalence of mental disorders and their relationship to social and military problems, let us now consider the measures that should be taken to deal with them. We might treat this important phase of the subject under the following headings: (1) treatment; (2) prevention; (3) mental hygiene in the army; (4) value of voluntary mental hygiene organisations; (5) co-operation of medical men.

#### TREATMENT

Splendid work has been done by our hospitals for the insane in this country, and we must congratulate hospital superintendents and their respective staffs for what they have done under sometimes very trying circumstances. There is immediate need, however, for enlargements of present buildings and the erection of new ones to accommodate a vast number of those suffering from mental disease who have been turned away from existing hospitals because of lack of room. There is great need in Canada for several psychopathic hospitals similar to the Boston Psycho-

pathic Hospital, and the Phipps Institute at Baltimore—hospitals equipped to treat early cases of insanity by modern methods and where research can be carried out. Another suggestion that has been made many times refers to the need of enlarging the medical staffs of our hospitals for the insane. It frequently happens that one physician is placed in charge of several hundred patients. Under such circumstances active treatment is replaced by custodial care, much to the detriment of the patients. In the past many appointments to our State hospitals have been political. New York State probably leads the world in scientific and intelligent treatment of the insane, and one of the reasons for this happy state of affairs lies in the fact that politics do not enter into appointments.

A word with regard to the treatment of the feeble-minded in Canada. Ontario with a mental defective population of not less than 10,000 is caring for less than nine hundred in one institution at Orillia. When last I visited the Orillia Hospital, there were but two physicians in attendance and not more than three qualified teachers. Quebec has no special hospital either for the feeble-minded or the epileptic. The Western Provinces are, I believe, making preparations to care more adequately for their mental defectives. One of the greatest needs in Canada to-day is that of farm colony and institutional care of the feeble-minded. At present we are travelling along the line of least resistance. We do not provide adequately for our feeble-minded, with the result that every year houses are robbed, buildings are burned, public schools crippled, venereal disease is spread, and people are killed by our defectives, who are allowed to roam at large.

### PREVENTION

We are fast beginning to realise that mental abnormality can in large measure be prevented. Twenty-five per cent. of all cases of insanity are due to alcohol and syphilis. We can prevent the alcoholic psychoses by means of prohibition, and mental disorders due to syphilis will become much rarer if we carry on an intensive campaign of education in sex hygiene and provide early treatment for all cases of venereal disease. Between 40% and 50% of all admissions to hospitals for the insane are individuals suffering from dementia præcox and manic-depressive insanity. There is a current belief among psychiatrists that much can be done to prevent these conditions if all individuals with psychopathic tendencies were trained early in healthy mental habits.

### PREVENTION OF FEEBLE-MINDEDNESS

Eighty per cent. of all cases of mental deficiency are due to bad heredity. If our feeble-minded population were cared for in farm colonies, the propagation of the condition would be prevented. In addition the following reforms are needed: (1) Every hospital for the insane should have attached to it a social service department, so that discharged patients could be followed up and given such advice and help that a relapse would be less imminent. (2) Establishment of psychiatric clinics in connection with general hospitals, schools and juvenile courts. Such clinics would discover many incipient cases of insanity, and would be the means of preventing many mental breakdowns. (3) The barring out of this country of all feeble-minded and insane immigrants. The examination of some 3,000 cases of mental abnormality at the Toronto General Hospital, revealed the fact that 51% had been born in countries other than Canada. The time has come for the Federal Government at Ottawa to organise an immigration department that will effectively prevent the importation of degenerates.

### MENTAL HYGIENE IN THE ARMY

Men have been drafted into the Canadian army without receiving mental examination. In this connection Sir William Osler says that the neuropathic make-up is one of the three great causes for the invariable rejection of recruits. From now on we should adopt a similar programme to that evolved in the United States—a programme by means of which all draftees are given a mental examination and rejected if mentally unfit. With regard to those soldiers who



return to Canada suffering from mental and nervous disorders, we should provide better facilities for treatment than are now available, and provide more agencies for re-education and for vocational and occupational training.

#### VALUE OF VOLUNTARY MENTAL HYGIENE ORGANISATIONS

Splendid work has been done by the National Committee for Mental Hygiene in the United States, and it is hoped that the new Canadian National Committee for Mental Hygiene, of which I have the honour to be secretary, will be an asset of value to the country. Our Canadian committee will work along lines outlined in this paper: we will collect facts and urge reforms.

#### CO-OPERATION OF MEDICAL MEN

We want medical men to become conversant with the salient facts concerning mental disorders and their relation to social problems. The time has come when a physician cannot consider that he is thoroughly trained and fulfilling his obligations to his patients unless he can recognise a beginning mental disorder, and either treat such a case himself or send it to a specialist. Medical men will probably do much for mental hygiene if they dispel from their minds the popular notion that insanity is an irresistible, unmanageable force, and replace such an idea by the thought that many mental disorders are curable, and that most can be prevented. If this were not the case, the term "Mental Hygiene" would not have been coined.

#### CARE OF THE FEET

Dr. Dexter D. Ashley, of New York, presents in the New York Medical Journal an exhaustive and elucidative treatise on care of the feet.

Painful, weak feet with no deformity and slight perceptible loss of motion except in the toes are perplexing. Not a few patients showing no marked deformity or loss of motion and wearing fairly good shoes, complain bitterly of their feet. Many of these have thin feet, sensitive skin, and very little heel cushion, or they have small bones out of proportion to the weight of the body. We must be careful not to let the neurotic element be too prominent in our minds as a causative factor of these symptoms. There are many etiological factors which should be eliminated before concluding that we have a neurotic case. With hardly an exception there is muscular weakness, an absence of tone, whether the foot is thin or fleshy. The foot is painful, the patient is suffering. Is it a purely static condition, is there inherent weakness, bone anomaly or disease, toxic or infectious arthritis, metabolic disturbance or sequelae? It may be a problem taxing the most skilful diagnostician.

These patients should be given physiological or therapeutic shoes as required, while searching for the causative factors; they should be encouraged to strengthen the entire muscular and nervous system by outdoor, brisk walking: on soft turf, when not contra-indicated, combined with general and special exercises to strengthen the intrinsic muscles of the foot; a diet easily digested and low in proteins; in summer months an outdoor life, walking with bare feet in sand or mud, with the head protected and no more clothing than is necessary. This will greatly benefit the nervous and muscular elements and correct many dietetic or metabolic conditions.

It would appear from Dr. Ashley's article that most foot ailments are in the main consequent upon ill-fitting shoes.

The physician upon whom rests the care of the community might well bear in mind that advice and council regarding the care of the feet—both physiological and therapeutical, should not be withheld, despite the modern tendencies of the populous to follow the lead of Dame Fashion—whithersoever she may carry one—foot-sore or otherwise.



## BOTULISM.

ERNEST C. DICKSON, CAPTAIN, C.A.M.C.

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My object in appearing before you is to draw your attention to a type of food poisoning caused by the ingestion of home-canned products, which has assumed considerable importance on the Pacific Coast of the United States during the past few years, and which is occurring with increasing frequency in other portions of that country. I am unaware of any established cases in Canada, although there is a little doubt that some will appear; but recent reports have shown that botulism has occurred, with some frequency, in England, and it, therefore, behooves us to become acquainted with the condition, and to recognise the causes for its occurrence, and the means by which it can be prevented.

Botulism, or allantiasis, the old wurstvergiftung of Southern Germany, has been recognised as a serious type of food poisoning since the early part of the nineteenth century, but it has been thought to be exclusively a type of meat poisoning, since the greater number of cases, as the name implies, were caused by the ingestion of sausages. So firmly has the idea that it is exclusively a meat poisoning been established, that when, in 1904, an outbreak of poisoning from bean salad occurred in Darmstadt, in Germany, Landmann, who investigated the outbreak and who proved that it was indeed botulism, made the statement that there must have been some pork cooked with the beans since it is impossible for the toxin of *B. botulinus* to be formed in other than meat-containing media.

Our accurate knowledge of the fact that botulism may be caused by the ingestion of foods of vegetables origin, dates from December, 1913, when there was an outbreak of food poisoning of the botulinus type at a sorority house at Stanford University, in which twelve persons were poisoned by eating a salad prepared from home-canned string beans. We were unable to prove from this outbreak that the intoxication was indeed botulism, as we were unable to demonstrate *B. botulinus* from any of the materials which were available for bacteriologic examination, but, stimulated by this outbreak, we obtained cultures of *B. botulinus* from the museum of natural history and from the department of bacteriology of Columbia University, in New York, and commenced a series of experiments which have been continued until a few weeks ago. As a result of our experiments, we have established, beyond all doubt, that the toxin of *B. botulinus* may be formed in media prepared from peas, beans, corn, asparagus, artichokes, peaches, pears, apricots and prunes. And since the outbreak which occurred at Stanford University, we have been able to collect records of a fairly large series of outbreaks, in which it was established that the poisoning was caused by the ingestion of one or other of these vegetables, or fruits, all of them home-canned.

The symptomatology of botulism differs from that of the usual types of food poisoning, in that the intoxication is essentially one which involves the central nervous system. The condition is not an infection, but it is true intoxication, the poisoning being produced by a bacterial toxin, somewhat analogous to the toxins of diphtheria and tetanus, which is formed in the food before it is eaten, and which is ingested with the infected food. The toxin is never formed within the body, as the optimum temperature of *B. botulinus* is from 24° to 28° Cent., and the toxin will not form at a temperature of 37.5° Cent., the normal temperature of the body. It differs from the toxins of diphtheria and tetanus, in that it is not digested in the gastro-intestinal tract, but is absorbed unchanged into the blood stream.

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FOOTNOTE. For a more complete discussion of symptomatology and pathology, see *Botulism: A Clinical and Experimental Study*, by E. C. Dickson, Monograph No. 3 of the Rockefeller Institute for Medical Research. (In press.)

The symptoms usually appear in from eighteen to thirty hours after the ingestion of the poisonous food, although they may appear in from four to eight hours. The earliest symptom is usually a sensation of languor and fatigue, but this is soon followed by characteristic disturbances of vision, blurring the vision, diplopia and loss of accommodation. There is often early vertigo, and incoördination of muscular movement. Dryness of the mouth and pharynx, a sensation of enlargement of the tongue, and a peculiar sensation of constriction of the throat soon follows. There is a marked inhibition in the serous salivary secretion, and the mucus portion is secreted in a thick, tenacious form, which is removed from the pharynx with great difficulty. Speech soon becomes impaired and unintelligible, and there is difficulty and eventually inability to swallow. The patients suffer greatly from strangling spells, induced by their attempts to swallow, or to raise the thick mucus from the pharynx. There is rarely any acute gastro-intestinal disturbance, although there may be initial nausea, vomiting and diarrhoea. A characteristic feature of the intoxication is that there is obstinate constipation, which may be so severe as to resist all efforts to induce evacuation of the bowels.

There is early blepharoptosis and mydriasis, with loss of pupillary reaction of light, and, occasionally, there is paralysis of all the extrinsic muscles of the eye, so that the eyeball remains fixed in the socket. Occasionally, there is paralysis of the muscles supplied by the motor portion of the fifth, and by the seventh, cranial nerves, but this is more uncommon. There is loss of the pharyngeal reflex in the majority of cases. There is marked general muscular weakness, but there is no true paralysis of the skeletal muscles, and the skeletal reflexes are not lost. True paralysis is, apparently, confined to the muscles which are supplied by the cranial motor nerves.

A striking feature of the botulinus intoxication is that there is no disturbance of mentality, and that sensation remains intact. There may be some inhibition of the sense of taste, but this is probably chiefly, if not entirely, due to the absence of the serous salivary secretion. There is rarely any disturbance of hearing. The disturbances of vision are entirely dependent upon the loss of function of the intrinsic muscles of the eyes, as the retina rarely shows any change. There may be initial headache and nausea, but there is otherwise rarely any pain.

The temperature is usually sub-normal, in fact, when fever occurs one should be strongly suspicious of the onset of some intercurrent infection, such as broncho-pneumonia. The pulse rate may be slower than normal at first, but it soon becomes rapid, and the combination of a temperature of between 96° and 97° Farh., with a pulse rate of over 130, is very striking.

The intoxication usually reaches its maximum severity in from four to eight days, and then, if the patient survives, gradually subsides. Convalescence is very slow and tedious. In fatal cases, death usually occurs in from four to eight days, and it is seldom that persons who survive for ten days succumb, unless some complication, such as aspiration pneumonia, ensues. Death usually occurs from cardiac or respiratory failure.

The mortality in the European cases, occurring during a period of over one hundred years, is about 40%, but in the United States, probably because only the severe cases are recorded, the mortality has been between 65% and 70%. When patients recover, there is rarely any persisting disability.

Treatment is most unsatisfactory. It is important to wash out the stomach, even though the poisonous food has been eaten several days before, as there is early inhibition of stomach motility, and cases are recorded where portions of the poisonous meal have been found in the stomach at autopsy several days after it was ingested. Purgation should be induced, if possible, preferably with magnesium sulphate, or some similar saline, and the lower bowel should be frequently washed by enemata. Simple, nourishing food should be given in sufficient quantities, and a generous supply of water should be administered, but it should be remembered that, on account of the loss of pharyngeal reflex and the frequent strangling spells, when the patient attempts to swallow, there is constant danger of insufflation pneumonia. It is, therefore, advisable to administer food and laxatives by stomach tube, and to give water by hypodermoclysis or by rectum. The Murphy drip has been found to be very satisfactory.



The pathology of botulism is extremely interesting, in that there is a peculiar, characteristic type of thrombus formation in the blood vessels of practically all organs, the thrombus being studded with leukocytes. The symptoms are not explained by the presence of the thrombi, however, as the thrombi are rarely found in animals which have died within forty-eight hours after the administration of the toxin. There is also marked hyperemia of practically all organs, and usually there are many hemorrhages in the meninges, and in the lungs and serous surfaces. Our experiments, and our histologic examination of tissues from human victims, do not support the theory that there is a so-called specific action on the finer structure of the nerve ganglion cells.

The importance of this type of food poisoning at the present time lies in the fact that by far the greater number of cases which have occurred in the United States have been caused by the ingestion of home-canned vegetables and fruits. The reason for the prevalence of the botulinus toxin in home-canned vegetables and fruits is that many of the methods of sterilisation which are employed in home-cooking are not sufficiently potent to kill spores of *B. botulinus*, when mixed with albuminous material in containers such as are used. The common practice is to immerse the filled jar of vegetables, or fruit, into boiling water in a washboiler for from two to three hours, and this is not efficient. We have found, in test-tube experiments with emulsions of spores of *B. botulinus* in brain and in vegetable media, that the spores will resist immersion into actively boiling water for more than two hours, and will resist immersion into water at 95° Cent. for more than three hours. Eight of *B. botulinus* were tested in this way, and the results were constant in seven. When one considers the time necessary for the penetration of heat into the centre of a closely packed jar of vegetables, it is readily understood that the sterilisation in the centres of the jar may be incomplete.

The addition of lemon juice or vinegar to vegetables, as recommended by Cruess, of the University of California, greatly reduces the resistance of the spores to heat, but lemon juice must be added in amounts of at least 4% to be of value. I have record of one outbreak of botulism which was caused by the ingestion of string beans, to which "a small amount" of lemon juice had been added, but evidently the amount of lemon juice was insufficient. Our experiments have shown that the mere presence of 4% lemon juice, or of 65% cane sugar, in buillon, is not sufficient to prevent the growth of *B. botulinus*, and the formation of its toxin, although they do inhibit the toxin formation to a certain extent. It is, therefore, apparent that one must not depend upon lemon juice, or sugar, to preserve the fruits, or vegetables, unless the sterilisation has been complete.

A very few outbreaks of botulism, caused by commercially canned vegetables, have been recorded, but they are very rare. The rarity depends, I believe, upon the fact that, in the United States, the vegetables are sterilised with steam, under pressure, at a temperature of from 240° to 250° Cent. The freedom from contamination of commercially canned fruits, which are canned at lower temperatures, is probably dependent upon the fact that only carefully selected, hand-picked fruit is canned. In the only instance of poisoning from home-canned fruit in which we were able to get all the data, it was found that the fruit had been unsalable, wind-fall fruit, and it is probable that the fruit had become contaminated with *B. botulinus* while lying on the ground.

It must not be understood that I am advocating any decrease in the amount of home-canning of perishable foods, but I am convinced that as professional men, who are interested in the preservation of the health of the community, we should take steps to have the public understand that the use of home-canned food is not unattended with danger, and that, with proper care, all danger of poisoning may be averted. Very often the home-canned food which is contaminated with toxin of *B. botulinus*, is so evidently spoiled that it is discarded at once, and no accident occurs unless it is fed to domestic animals or fowl. There are, however, many instances when spoiled home-canned food has been fed to domestic animals and fowl, and they have developed symptoms which are analogous to those produced by botulinus intoxication in human beings, limber-neck in chickens and turkeys, forage poisoning in horses and mules, and paralysis in hogs. At other times the food is not so evidently spoiled, and poisoning may be caused by the housewife tasting it to determine whether it is good. I have records of six outbreaks of botulism which were caused in this way; and five of the six victims died. Usually there is a peculiar cheese-like odour in food



which is contaminated with toxin of *B. botulinus*, and it is this odour which attracts the housewife's attention, and causes her to taste the food. Often, however, this odour is so faint that it does not attract attention, unless one is familiar with it, and is looking for it.

All of the cases of poisoning by home-canned products have occurred when the food has not been cooked before it was eaten. It is a common thing to serve home-canned vegetables, without cooking, as salad, and in such cases there is especial danger, as the toxin has a peculiar sharp taste, which is quite palatable in salad. At other times, the poisoning has occurred after the ingestion of fruits which are "a little turned," and which are not displeasing to the taste. It has been definitely established that the toxin is destroyed if it is heated to the boiling point, and that contaminated food is entirely safe, in so far as botulinus intoxication is concerned, if it is cooked before it is eaten. There are numbers of instances in which portions of contaminated food have been cooked and eaten without ill effect, whereas the remaining portion has been eaten as salad, and has caused the fatal poisoning.

The important facts that should be emphasised in connection with botulinus intoxication from home-canned foods are the following:

1. That only the best available methods of home-canning should be recommended.
2. That the housewife should not be discouraged from canning perishable foods, but that she should be instructed as to the possible dangers of poisoning in using home-canned food, and as to the methods of preventing its occurrence.
3. That, under no circumstances, should home-canned food which shows any signs of spoilage be used as food or even tasted.
4. That the slightest indication of an unusual odour should be regarded as sufficient reason for discarding home-canned food.
5. That all home-canned food should be boiled before it is eaten or even tasted.
6. If these precautions are taken, there will be no danger of the occurrence of food poisoning of this type from home-canned products.

## AN EXPERIENCE WITH DIPHTHERIA CARRIERS

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The subject of this paper is given as "An Experience with Diphtheria Carriers." A more suitable title would have been "Two Experiences with Diphtheria Carriers," for had there been but one instance, the matter might not have impressed me so deeply, and this paper would not have been inflicted on you.

I know you will thank me to be brief, and I shall do my best to earn your gratitude.

Owen Sound has a population of about twelve thousand, and a school population of about twenty-four hundred. One school nurse is employed by the board of education, but she works under the direction of the M.O.H.

In November, 1916, on a Saturday morning, I was notified by one of our physicians that a child had died of laryngeal diphtheria within an hour of his first visit, and that two other children in the same family, who had been at school the day before, were sick—one with a profuse nasal discharge—and that he suspected that both had diphtheria. Swabs were taken from the noses and throats of these two and sent to the provincial laboratory at Toronto, with a request to telegraph a report. Both were positive.

These two children were each given 10,000 units of antitoxin, and both recovered.

On the Monday following, the first school day, in company with the school nurse, starting with the two rooms attended by these two children, I inspected all the children in the school. We found a number of children with very red throats, a few with very slight signs of membrane on the tonsils, some of whom complained of slight malaise; about twenty in all. Swabs were taken of these suspicious cases, and sent, as before, to Toronto, with a request for a report by telegram. These suspects, and their brothers and sisters, were all sent home; and, where they were too young to explain the reason, the nurse made a personal call. Inside of forty-eight hours, reports were received that seven cases were positive. Those having negative reports were notified by the sanitary inspector to return to school. The others were quarantined and placarded. Those having positive reports were given 5,000 units of antitoxin, and given a spray of 1-in-5,000 bichloride of mercury. The other members of the families were given protective doses of 1,000 units: In about ten days swabs were taken, and, in all but one case, the reports were negative. From the negative ones second swabs were taken, and negative reports received. They were then released, after bichloride baths and their homes fumigated, etc. After a few days the one positive case had another swab taken; this case was negative, and, after a second negative report was received, this case was treated as the others had been.

I should have stated before that the positive cases were almost entirely confined to the two rooms, attended by the children from the home where the death occurred, and within a radius of a few seats from those occupied by the two children.

We not only inspected the children of this school, but those of all the other schools in town. There had been another death from diphtheria in another part of the town about the same time, but, apparently, there had been no spreading of the disease from this source.

This was the end of the diphtheria.

All this inspection meant a lot of work. Did it pay? Did we avoid an epidemic? I think so; and if so, the vigilance was worth while. Probably some lives were saved; many cases of sickness were avoided; many anxious hours to the parents; children were saved loss of time from school—and, last and not least, the M.O.H. and sanitary inspector had, in the end, much less work.

So much for one experience. No cases occurred for over a year. Then, on December 31st, 1917, I was notified of a case in a home, the children from which attended another school. Inves-

tigation showed that this child had probably contracted the disease in another town during the Christmas holidays. This child died; but two other cases in the same house recovered. I might here mention, in connection with this death and the previous one, that both cases were far advanced before a physician was called.

When school opened two or three days later, the school nurse and I again inspected all the school children, starting, as before, at the school attended by the children from the infected home, because these children had, in some cases, been playing during the holidays with the children from the home where the first case was reported.

Between the 4th and 11th January, 1918, seven carriers were located, all but one being from the one school. The same measures of treatment, quarantine and clearance swabs were enforced. No more deaths, no more cases; and none since.

Was this only a coincidence? I don't think so. I am not from Missouri, but I am of Scottish descent, and not easily persuaded to change my beliefs, and I cannot even persuade myself that two epidemics of diphtheria were avoided in Owen Sound by the careful work of the school nurse, aided by myself, for I may tell you that while I at first attempted to examine all the children, I found it was making a great demand on my time during a busy season, so that, later, I had the school nurse select the subjects for my final opinion. We use the wooden tongue depressors, one for each child. They cost very little, and are cleaner and safer.

I was struck by the fact that positive reports were received from children whose throats were merely red, and who did not complain of feeling unwell at all. Had these been allowed to run at liberty, who will say how many exposed children, of low vitality, might have contracted the disease in a severe form? Where would the end have been?

I have been asked "Would you advise closing schools during an epidemic?" I would say "No, by all means keep the schools open, so that all suspects may be examined, and a much better check kept on all cases.

Let me state here that the provincial laboratory gave splendid service, both in the prompt report on swabs, and in promptly supplying all the antitoxin required. I recommend the telegraphing of reports. It saves time to those who are to be released, and admits of prompt treatment to those requiring it. It does not cost the municipality very much. The only improvement I could suggest in the service of the board of health, is that they assume the expense, and wire all diphtheria reports.

You may not agree with me; but as I said before, being a Scotsman, and while open to conviction, mighty hard to convince, I am willing to argue in defense of the statement I now make. I don't believe there is any necessity for an epidemic of diphtheria. The Ontario government, through the provincial board of health, has provided us with the means of combating any such outbreak. No one to-day doubts the efficacy of antitoxin, early administered, and in large doses. I have seen no ill effects, even in suspects, except an urticaria.

Then, being provided with the means of fighting the disease, both offensive and defensive (for the small dose does protect just as surely as the large doses cure), let us not be laggards about entering the fray at the first warning of danger. And while some may curse us as busybodies, even these, along with the greater majority, will bless us for our activities, when they realize what these mean.

Stimulation should be given as required, strychnine probably being of value. Digitalin has been used extensively to combat cardiac failure, and pilocarpin may be used to relieve the dryness of the mouth and pharynx, although pilocarpin should be given with caution, since the patient is unable to cough up fluid from the lungs if pulmonary oedema is induced.

Antitoxic serum may be produced, but experiment has shown that it is of little therapeutic value, unless it can be given very early. It affords full protection to guinea pigs when mixed in vitro and injected with the toxin, but when given more than twelve hours after the administration of a M.L.D. of toxin there is little protection. I have used antitoxic serum in two human cases of botulism, and both recovered; but I am not at all certain that the serum in any way influenced the course of the intoxication, as it was several days after the ingestion of the poisonous food that the serum was given.



## CURRENT LITERATURE

That the layman looks upon the work of the Army Medical Service with considerable admiration is a well established fact. Prosthetic surgery especially commends itself to those who have witnessed its wonderful achievements. The following article, taken from a recent publication—"The War and the Future" by John Masefield—though not technically medical is nonetheless of interest to the profession.

"If you turn your back upon the Army Zone and walk into the green and pleasant parts of France, you will notice that every big building in France is flying a Red Cross flag, for every big building now in France is a hospital. The business of the care of the wounded is a bigger business than coal or cotton or steel in time of peace. There are hundreds of thousands of orderlies and nurses and all the picked surgeons of the world looking after the wounded. There are miles of Red Cross trains carrying wounded, and there are more ships carrying wounded than carried passengers between England and America in the time of peace. I should like to tell you of one or two things which have been done to better the lot of the wounded. Firstly, about facial surgery. In this war of high explosives it often happens that men will be brought in with all their faces blown away, with practically no face left beneath their brows, their noses gone, their cheeks gone, their jaws and their tongues gone. In the old days, if those men had survived at all, they could only have survived as objects of pity and horror and disgust. But to-day the facial surgeon steps in and re-makes their faces. The facial surgeon begins by taking a bone from the man's leg. Out of that bone they model him a new jaw-bone, which they graft onto the stumps of the old. Then cunning artists model him a new palate and a new set of teeth. Then, bit by bit, they begin to make him new cheeks. They get little bits of skin from the man's arm, and other little bits from volunteers, and they graft these on to what was left of the man's cheeks. Though it takes a long time to do, they do at last make complete cheeks. Then they take a part of a sheep's tongue and graft it on to the roots of the man's tongue, so that it grows. Then they add artificial lips, an artificial nose, and whiskers, beard and moustaches, if the man chooses. They turn the man out, oftener handsomer than he ever was before, able to talk, and to earn his own living on equal terms with his fellowmen.

You can see the men brought in, looking like nothing human, looking like bloody mops on the ends of sticks. Gradually you see them becoming human and at last becoming handsome and at last almost indistinguishable from their fellows. Surgeons not only restore the men fresh from the battlefield, but they remake the faces of those who have been badly patched up in distant parts of this war, such as Mesopotamia, where special treatment has been impossible, and though this re-making takes a very long time, it can still be done.

Another very wonderful treatment is the treatment of the burned men. In this war of high explosives and flame projectors many men are shockingly burned. You may see men brought in with practically no skin on them above their waist, unable to rest, and suffering torments. They apply the new treatment of Ambrene to these sufferers. Ambrene is said to be a by-product of paraffin mixed with resin and with amber. It is applied in a liquid form with a camel's hair brush. Directly it touches the burned surface all pain ceases and the man is able to rest. In a fortnight the man has an entirely new skin, with no scar and practically no discoloration, and he is able to go back to the trenches, often much disgusted at being cured so soon.

When you have seen the wounded you have seen the fruits of this business. And when you have seen the wounded you resolve within yourself that at whatever cost this must be the last war of this kind. This war is being fought to-day in order that it may be the last war of its kind. If we succeed in this, as we shall, all the bloodshed and horror and misery of this war will have been very well worth while. But even when we have gotten rid of the causes of this war, there will still remain, in all human societies, many potential causes of war. A great deal of cant is talked

about war. In all commercial countries there must be some manufacturers who make things that will be of great demand in war, and it is an unfortunate fact that after long periods of peace men begin to think a great deal about war, to read about it, and to brood upon it, and even to long for it, so that they may have that deep experience for themselves. And to many young men war is exceedingly delightful. It gives them adventure, excitement and comradeship. Only the other day a young English soldier said to me: 'Do you think this lovely war will ever come to an end?' I said I hoped it would, some day. And he said, 'Well, I don't know what I shall do when it comes to an end. It will break my heart. I've had the time of my life.' That boy was not quite nineteen. He had been a school-boy six months before. He had been badly wounded three weeks before. He had been at death's door a fortnight before. He had made an amazing recovery and was panting to get back. There are hundreds of thousand of young men like that, who thoroughly enjoy every minute of it. The older men do not view war with quite such enthusiasm. Their attitude, perhaps, is much like that of the Naval Officer who said the other day; 'I do wish to God this war would end, so that I could get the men back to battle practice.'

Even if we were able to be rid of all these potential causes of war we should not get rid of evil in this world, and as long as men can be evil, evil men will strike for power, and the only way to resist evil men, when they do evil things, is to use force to them. It often needs a very great deal of force.

Yet when people ask me if I think that wars will cease to be, I always say that I do, because the evil things in this world do get knocked on the head. The dragons and basilisks and cockatrices have become extinct, and most murderers get hanged, and most lunatics get locked up and men are coming more and more to see that certain evils that afflict life are not inevitable and are not the will of God, but are simply the result of obsolete and stupid ways of thinking and of governing. It ought to be possible for the mind of man, which made the steam engine, the submarine and the aeroplane, and conquered the Black Death and yellow fever and typhus fever, to devise some means of living, nation with nation, without this periodical slaughter known as war. It won't be easy to devise any such means, men being what they are, with the instincts for war deeply rooted in their hearts, or easily put there by their rulers; yet the mind of man can do most things, if he can only get the will to do them."

### \*EPIDEMIC INFLUENZA

Under various names, epidemics corresponding to epidemic influenza have occurred at irregular intervals since accurate descriptions have been made of disease. It is likely that at still earlier times this disease was combined and confused with other epidemic disorders, and so did not stand out as an entity until a relatively modern period. In early English literature this disease is spoken of under a variety of terms. Creighton recognizes it under the name "ague," used by the British seventeenth century authors. In 1658, Cromwell died from this disease, when Morton says the country was "one vast hospital." The Italian term "influenza," first came to England in association with the epidemic of 1743, and it has been employed in connection with the great epidemics of 1833, 1847, and 1889-1890.

About 1712 the French term "la grippe" came into use and has been periodically revived ever since. The great pandemics usually originated in the Far East, and gradually extended westward. The rate of human travel and the degree of intercourse between various parts of

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Creighton: History of Epidemics in Britain, 1891.

\* The Journal of the American Medical Association.

the world determined the rapidity of the extension. Besides the great pandemics, scarcely a year has passed without local outbreaks which have been classed under the term "influenza." Whether these are identical with the more widespread epidemics it is impossible to say.

The severity of the disease has varied greatly; some epidemics are very mild; others have been severe. Influenza has embraced America in several pandemics. In his remarkable work on epidemic diseases, published in Hartford in 1799, Noah Webster locates the first American epidemic of which he could find an account in 1647. It passed through the whole country and extended to the West Indies. There were between 5,000 and 6,000 deaths in Barbados and St. Kitts. In 1655 a second severe epidemic occurred in America. Benjamin Rush described an epidemic 1789 in Philadelphia, which was brought there by members of the first Congress, which had assembled in New York. Daniel Drake records a widespread epidemic in the West in 1807.

The history of epidemics of influenza does not differ so much from that of other diseases spread by human intercourse that are usually called contagious. A widespread epidemic follows the introduction of a specially virulent virus, and there follows a general immunity among those of the population who have been infected. As the epidemic dies out, the infection decreases in virulence and only sporadic cases occur. From such cases and probably chronic carriers, local outbreaks occur; but the general immunity prevents any general epidemic. After a period of years a new susceptible population has replaced the immune one, and with the introduction of a fresh virulent virus a general epidemic is again brought about. This would account for the great susceptibility of young persons, and as it is twenty-eight years since the last great epidemic, we should not expect many individuals above 30 years of age to be now affected.

### CAUSATION

The causative agent of epidemic influenza has not been certainly recognized. The attachment of the name "influenza bacillus" to a small bacillus described by Pfeiffer in 1892 has been followed by its frequent reception as the actual specific agent. There is, however, much uncertainty as to its etiologic rôle. It is to be hoped that the study of the present epidemic may lead to some certain knowledge regarding the essential cause of the disease. This should enable us to determine whether the epidemic cases and those of limited mild epidemics are really identical with the ones observed in the great periodic outbreaks.

### COURSE OF THE DISEASE

The cases in the present epidemic begin usually quite suddenly with pain in the head, back, eyes, limbs and joints. With the pains there is great prostration, chilliness and a fever of from 101 to 104 F. The pulse does not become very rapid, and the patient often is drowsy. Vomiting may occur. Sometimes there may be diarrhoea, but usually there is constipation. After the disease has become established the mucous membranes of the nose and throat become reddened, and there is sneezing and redness of the conjunctiva. Involvement of the larynx causing hoarseness, and of the bronchi causing cough are common. There is an associated leukopenia or a normal leukocyte count. A leukocytosis points to some complication. The fever gradually falls to normal after a few days and more or less prostration is present during convalescence. A transient albuminuria is frequent. Many of the cases have hemorrhages of the mucous membranes of the nose, some of the urethra or bowel.

### SECONDARY PNEUMONIA

Not infrequently a lobular pneumonia develops after a few days, and this is responsible for most of the fatalities. The pneumonia differs from the usual picture of pneumonia, in that the temperature may be slight, and the pulse rate may give little indication of the gravity of the condition. These cases, instead of subsiding, may come down to practically normal temperature for twelve hours; then there may be a sharp rise in temperature, not followed by a chill, backache, boneache, headache or nausea.



About this time there may also be expectoration containing bright red blood. As a rule, twelve or twenty-four hours after the second rise of temperature on physical examination in the lower lung, in a preponderance of cases on the left side, as seen at Great Lakes, small areas about the size of a silver dollar of typical pneumonic consolidation are found by auscultation. These areas may become marked so that by the second day of the second rise scattered through the lung, probably both lungs, ten or fifteen of these small areas may have appeared. In the epidemic at Great Lakes, if the patient did well these would gradually disappear. They did not resolve as a pneumonia would resolve. The clearing up of the lung after this in the recovered patients was remarkable as to its rapidity. Other cases went on to a typical lobar, massive consolidation, as far as the physical signs were concerned, with dullness, increase in fremitus, typical tubular voice and breathing and all the signs, except that there was not a very marked increase in the pulse rate, and the respirations were not up to this time markedly increased. Cases with almost complete consolidation of the lung, as to the lower lobes, with a temperature of 105, would have a pulse around 100, with respirations 24 or 26. There may be rapidly developing toxemia and vasomotor depression, with death of the patient resulting in many cases.

### INCUBATION PERIOD

The incubation period in these influenzas is probably very short, but it is difficult to obtain accurate figures on this point. The disease is probably spread entirely by contact infection, the virus of the disease being disseminated for short distances through droplets driven into the air in coughing and sneezing. Circumstances which favor this means of spread, such as crowding in cars, favour the spread of the disease.

### TREATMENT

The treatment of the disease is largely symptomatic, Acetylsalicylic acid or similar remedies may be required to relieve the pain. The acetylsalicylic acid may be given in a dosage of 1 gm. (15 grains) every three hours, as advised by Hewlett, or a smaller dose combined with 0.1 gm. (2 grains) of acetphenetidin, until symptomatic relief is secured. Warm baths may give relief, although cases seen at the Cook County Hospital hydrotherapeutic methods failed and were discarded. The mouth should be kept clean, and elimination stimulated by the free ingestion of water and hot drinks. The patient should be kept in bed in a well ventilated room until the fever has disappeared. Chilling should be avoided. The latter precautions will do much in avoiding the occurrence of complications.

When pneumonia develops, as indicated by moist râles in the base of the lungs, with or without dullness on percussion, the patient demands particular care. Every effort must be made to provide for an adequate intake of fluids, and for nourishment, which must be given in fluid form to a large extent. Warm packs are often useful, combined with the application of cold to the head. With any indication of failing heart, stimulants are indicated.

In the cases of secondary pneumonia, many of which result fatally, the chief conditions to be combated are the severe toxemia and the vasomotor depression. The toxemia may be combated by the usual methods, getting fluids into the body by mouth or proctoclysis or even by hypodermoclysis. Small doses of epinephrin may be given at the same time. The removal of the toxemia may be added by securing elimination, giving large doses of salts, such as magnesium citrate, or by the giving of calomel. In severe cases, venesection may prove extremely valuable. If a marked cyanosis occurs as is frequently the case, this may be combated by the use of oxygen by inhalation, perhaps according to the method devised by Meltzer, or even as has been suggested by Dr. F. Tice, by injection of oxygen under the skin. The prostration is to be combated by the use of the usual stimulants, such as caffeine and sodium benzoate, digitalis, strophanthus or camphorated oil, usually hypodermically. The final stages in this pneumonia are frequently a massive exudation into the lungs and bronchi. At the Great Lakes Naval Training Station efforts have been made to combat this by the use of morphin and large doses of atropin, in some cases as much as 0.0025 gm. or 1.25 grain, being used.

Specific measures are not available in the treatment of influenza. With certain identification of the causal agent, we may hope for some specific protective measures, and perhaps for some specific therapeutic serum.

In the absence of a specific virus to be used in immunizing animals, there remains but one source of a therapeutic serum at the present time. This is in the blood of persons recently recovered from the disease. It is quite probable that the blood of convalescent patients contains antibodies for the specific agent of the disease. It would be desirable to inject citrated convalescent blood into the muscles of patients with pneumonia at least. Naturally such blood should be known to give a negative Wassermann reaction. In view of the strikingly beneficial results from convalescent serum in scarlet fever secured by a number of observers, it seems reasonable to try this in influenzal pneumonia, especially as it is devoid of any harmful effect.

#### PROPHYLAXIS

The measures to be taken to prevent the spread of the disease comprise all those which interfere with the transfer of the infectious materials from the sick to the uninfected. This includes isolation of the patient, and the intelligent use of proper gauze masks by the attendant. In the time of an epidemic, prompt and efficient isolation of the first cases in a community could accomplish much. If this has been neglected and the infection has spread among the population, measures which prevent the coming together of numbers of persons in close quarters are to be employed. The desirability of closing schools in a large city in the presence of an epidemic is a measure of doubtful value. In smaller places this is more reasonable, and the danger of infection when children are outdoors should be less than when they are brought together in a school-room.

## Book Reviews

### THE GYNAECOLOGIST—A PHYSICIAN OR A SURGEON?

For long past it has been held that the Gynaecologist is a physician and not a surgeon. In the opinion of Eden and Lockyer and their distinguished collaborators in the \*New Gynaecology this view is not longer tenable, but rather the reverse—the great changes through which gynaecological practice has passed during the last ten years having defined the subject as a special branch of surgery, in close touch with abdominal surgery generally.

When the abdomen is opened for the relief of disease apparently of pelvic origin, the Gynaecologist must be prepared to deal with abnormal conditions of the gastro-intestinal tract, the urinary canals, the kidneys, the appendix, the bladder and rectum, as these organs are frequently associated with pelvic disease in women.

In consequence of this development, it has been felt that the time has arrived to put into concrete form the broadened interests of the Gynaecologist from the modern view-point.

In the three-volume work recently published, edited by Dr. Thos. Watts Eden and Dr. Cuthbert Lockyer, a notable contribution to medical literature has been achieved, and it may be fairly claimed to be the most comprehensive gynaecological treatise which has appeared in any language.

Realizing the value of concentrated and combined effort, the editors have been fortunate in securing the co-operation, as contributing authors, of the ablest British Gynaecologists, while two representative American Gynaecologists have also collaborated.

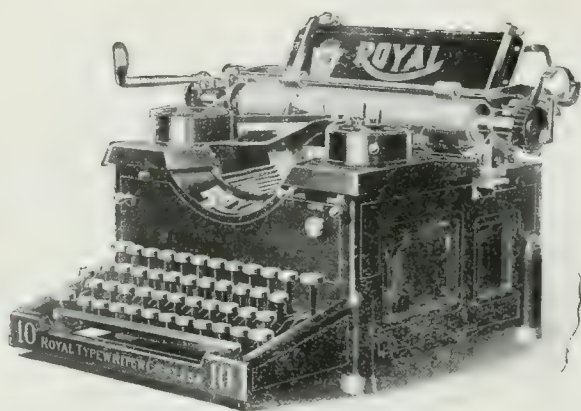
Volume 1 commences with a good account of the anatomy of the female pelvic organs by Professor G. Elliott Smith and J. S. B. Stopford. Chapter two is devoted to a discussion of the female reproductive organs by Miss A. L. McIlroy. The section is complete and devoid of unwarrantable conclusions.

Dr. Ernest Shaw contributes a good description of the organisms met with in the female genito-urinary tract.

—Mr. Beckwith Whitehouse discusses thoroughly methods of gynaecological examination.

—Methods of blood examination of proved clinical significance are detailed by Dr. W. W. C. Topley.

\*"The New Gynaecology." Edited by Thomas Watts Eden, M.D., F.R.C.S.E., F.R.C.P.;\* and Cuthbert Lockyer, M.D., B.S., F.R.C.S., F.R.C.P. In three volumes, each containing 750 to 800 pages of large type, with numerous coloured plates and other illustrations. Price, delivery charges prepaid \$35.00 cash; or \$39.00 if paid in instalments extending over a period of not more than one year.—Toronto: The Macmillan Co. of Canada, Limited.



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—Dr. J. W. Ballantye contributes an interesting article on the malformations of the female generative organs.

—Ectopic gestation, including the subject of Hamatocele, is considered very completely by Dr. G. Blacker.

—Dr. T. G. Steven's article on Gonorrhœa in women is practical and to the point.

—Syphilis in women, containing a most interesting portion on conceptional syphilis, has been thoroughly discussed by Mr. A. Shillitoe.

—Original and important articles on Streptothrex infections and Echinococcal invasions have been contributed by Dr. Taylor Young and Prof. D. A. Welsh.

—Dr. Purves Stewart writes a concise article on Nervous Diseases associated with morbid conditions of the pelvic organs.

Mr. Comyns Berkeley opens Vol. two with a clear and well-illustrated account of diseases of the vulva and vagina.

—The brilliant and well-reasoned article on Endometritis by Prof. B. P. Watson of Toronto should go far towards clearing the diversified opinions held by many writers on this subject.

—"Dr. Lockyer will add greatly to his reputation as a pathologist and careful clinical observer by his article on Myomata—emphatically the best account of these tumours to be found in any text-book."  
—"The Lancet," Oct. 13, 1917.

—"Cancer of the Uterus by Prof. T. Wilson, is a mine of information."—"The Lancet," Oct. 13, 1917.

—Prof. W. W. Chipman, of Montreal, presents a well-balanced and effective discussion on backward displacements of the uterus.

—Tumours of the Ovary are clearly and completely dealt with by Dr. H. Williamson and Dr. J. D. Barris.

Diseases of the breast—obviously falling into the province of the gynæcologist—is the subject with which Mr. C. C. Choyce ably opens volume three.

—Methods of examination of the urethra and bladder are discussed most intelligently by Mr. Thompson Walker.

—Mr. Lockhart-Mummery gives a masterly discourse on Diseases of the Rectum.

—Technique of gynæcological operations gives one of the editors, Dr. T. W. Eden, an ample opportunity of sustaining his high reputation in the field of gynæcology.

—Mr. Victor Bonney contributes a sterling article on minor uterine operations.

—The after-treatment of gynæcological operations, written by Prof. Martin of Chicago, is deserving of high commendation.

"The Lancet" says: "We have no hesitation in saying that this work does the greatest credit to all concerned in its production, and it is the best and most complete work on gynæcology which has



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appeared so far in the English language. The illustrations are extremely well reproduced, and great credit is due to the artists who drew them."

"The Edinburgh Medical Journal" says: "There are some books which it is a real pleasure to review, and the above falls into this category . . . One of the best books on the subject of recent years . . . A notable work."

"The Boston Medical and Surgical Journal" says: "The illustrations are abundant and clear. The classification of general gynæcology, regional gynæcology and operative gynæcology has been adopted for its usefulness in clinical work and in teaching, rather than on account of any logical basis. Knowledge of obstetrics forms an essential part of the training of a gynæcologist, and in this work attention is paid to the overlapping of the two subjects."

"The result is an unusually well-balanced book, up-to-date, yet conservative; giving the newer views, but cautious when evidence tends to yield to theory. The style is clear and direct, and the tone throughout is scholarly."

## **ADJUSTING LEGS OF UNEQUAL LENGTH.**

When the legs are very unequal in length the longer leg may be shortened.

"An incision four inches long is made laterally or anteriorly, separating the fibres of the muscles and exposing the femur at about its middle. The bone to be removed is marked above and below, allowing the leg to be  $\frac{3}{8}$  in. or  $\frac{1}{2}$  in. longer than its fellow. The bone is cut with a Gigli saw, or a sharp osteotome; the latter method requires less exposure and disturbance of the tissues."

"The femur is cut through; then each end is brought out of the wound and sawed, the amount removed from each end carefully, measured by a sterile steel ruler. The bone sawed straight; or one end sawed wedge-shaped and the other like an inverted wedge to fit it; or each end may be cut like a long step so that they overlap and are held by a bone screw suggested by Galli, the bone drilled with a screw tap which corresponds to the screw. A number 14 screw tap and screw are used. The bone is adjusted and sutures placed; Coaptation splints are applied over sterile sheet wadding, and a long plaster of Paris over this. The patient is kept in bed four or five weeks, and is allowed to walk on the plaster, after that with crutches. When walking is easy the plaster is gradually omitted."

The foregoing is typical in clearness and practicability of the three hundred and forty-seven articles

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\*"Technique of Operations on the Bones, Joints, Muscles and Tendons," by Robert Soutter, A.B., M.D. (Harvard) Assistant Surgeon to the Children's Hospital, Boston; Surgeon-in-Chief to the House of the Good Samaritan; Surgeon to the Long Island Hospital, Boston; Surgeon to the Massachusetts State Hospital, Canton; etc.; 350 pages, 504 illustrations. Price postpaid, \$4.50 net.—Toronto: The Macmillan Co. of Canada, Limited.

which Soutter has embodied in an unique work containing only the most carefully tried-out methods which cover operations on the bones, joints, muscles and tendons.

Diagrams and descriptions are given of many uncommon pieces of surgical apparatus which are useful in complicated conditions and in operations on fractures, while methods in after-treatment, which are essential in securing the best results, are also given.

The author also describes operative measures to correct deformity, to improve function and to restore locomotion in paralysis resulting from wounds or from disease.

For the sake of brevity the history and origin of operations is omitted. The work is not an Encyclopedia, but a ready reference for the technique of the more practical operations on the upper and lower extremities. The surgeon will find it unusually helpful.

**CHOOSING AN ANTISEPTIC.**

One of the most outstanding controversial points in modern surgery to-day is the choice and use of antiseptics. The unparalleled severity and frequency of wound infections in the present war has led to considerable advances in our knowledge of antiseptics and of methods for their successful employment.

During the past decade, following upon the teachings of Pasteur and Lister, much has been written and embodied in many texts upon this subject, but it remained for Dakin and Dunham to produce a \*handbook which not only gives an account of the chief chemical antiseptics which have been found useful for surgical purposes during the present war, but covers most concisely the methods of preparation and use of various new antiseptics and modifications of old ones which have received some measure of endorsement by military surgeons during the past three years.

The authors have approached their subject most scientifically. Before employing any antiseptic, the chemical reaction upon the tissues chosen for its application must be carefully considered. The resulting phenomena should be in accordance with the effects desired. For example, Hydrogen Peroxide, which is an unstable, easily decomposed, inorganic antiseptic, acting as anoxidising agent, must be frequently renewed or restricted in its use to conditions where temporary action only is desired. On the other hand, when prolonged action is required and frequent application is impossible, recourse must be had to more staple mixtures, which yield up their store of antiseptic slowly.

\*"A Handbook of Antiseptics," by Herman D. Dakin, D.Sc., F.I.C., F.R.S., and Edward K. Dunham, M.D., Emeritus Prof. of Pathology, University and Bellevue Hospital Medical College; 129 pages. Price postpaid, \$1.25 net.—Toronto: The Macmillan Co. of Canada, Ltd.

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# Therapeutics

To the Editor,

The Canadian Medical Quarterly,

On the subject of

PSORIASIS

The benefits to be derived from case discussions are obvious to all our readers. The sentiment of public opinion expressed in its broadest sense usually gives the truest perspective of any question.

The general opinion of the medical profession expressed on a subject of interest should be helpful and enlightening to the profession as a whole.

The advantages to be gained in establishing a therapeutic column rest with each individual practitioner. If you can help and be helped it should be your privilege and pleasure.

In subsequent issues of the Canadian Medical Quarterly we propose to present discussions such as are to be desired at any clinical conference or round table discussion. The names of contributors will be published only upon such direct understanding with those members of the profession concerned.

One of our subscribers has submitted a most interesting article upon the subject of Psoriasis, detailing the successful treatment and cure of a case which had a previous duration of chronicity extending over a period of 13 years.

In our next issue we desire to place before the profession an outline of treatment on Psoriasis as gleaned from the discussions of our readers. No doubt you have tried various forms of treatment with varying degrees of success. Use the blank form in the opposite column and tell your fellow practitioners your findings and conclusions on this subject.

Make the therapeutic column your clearing house. The profession will thus be benefitted.

Your hearty co-operation is anticipated.

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## IN OUR NEXT ISSUE.

Every practitioner is interested in Anaesthesia. Recent investigations on this subject have gone far towards revolutionising anaesthesia in its relation to surgical procedures.

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service that has brought suffering to prac-  
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much broader are our conceptions of ser-  
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and the task ahead accomplished.

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of her citizens in the years to come, that  
her obligations shall be properly met and  
that her people may be fully fed, housed  
and clothed. Let each pledge himself con-  
stantly to remember that we owe it to the  
community to give our best at our work  
each day—to eliminate waste and to “play  
the game” all the time.

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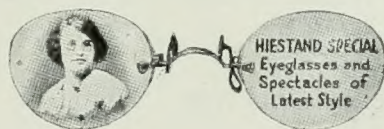
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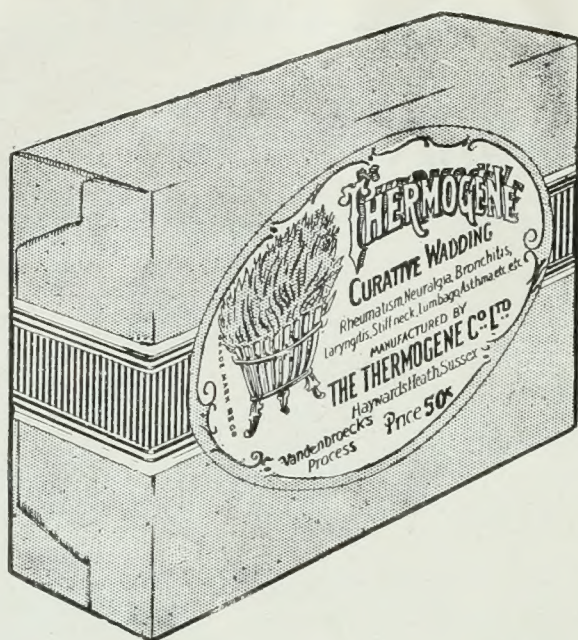
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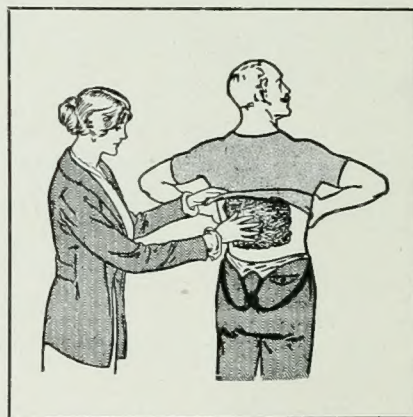
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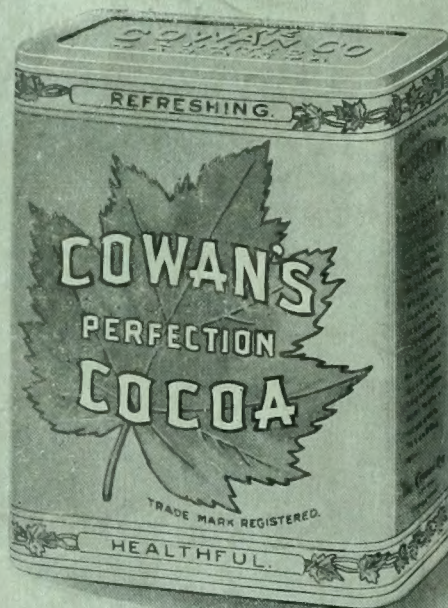
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